FLEX2JX

Instruction Manual

ARC
ADVANCED RADIOTECH CORPORATION

Service Information

Your New Radio System

Thank you for your purchase of ARC Flex 2JX radio remote control system. Without a doubt, our Flex 2JX system is the ultimate solution for providing precise, undeterred, and safe control of your material.

If your product ever needs modification or service, please contact our representative in your country or at the following location:

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PRODUCT MANUAL SAFETY INFORMATION

Advanced Radiotech Corporation (ARC) offers a broad range of radio remote control product for material handling applications. This manual has been prepared by ARC to provide information and recommendations for the installation, use, operation and service of ARC's material handling products and systems (ARC Products). Anyone who uses, operates, maintains, services, installs or owns ARC Products should know, understand, and follow the instructions and safety recommendations in this manual for ARC Products.

The recommendations in this manual do not take precedence over any of the following requirements relating to cranes, hoists lifting devices or other material handling equipment which use or include ARC Products:

- Instructions, manuals, and safety warnings of the manufacturers of the equipment where the radio system is used.
- Plant safety rules and procedures of the employers and the owners of facilities where the ARC Products are being used.
- Safety standards and practices for the industries in which ARC Products are used.

This manual does not include or address the specific instructions and safety warnings of these manufacturers or any of the other requirements listed above. It is the responsibility of the owners, users and operators of the ARC Products to know, understand and follow all of these requirements. It is the responsibility of the employer to make its employees aware of all of the above listed requirements and to make certain that all operators are properly trained. **No one should use ARC Products prior to becoming familiar with and being trained in these requirements and the instructions and safety recommendations in this manual**.

WARRANTY INFORMATION

For information on ARC's product warranties, please contact ARC representative nearest to you or visit www.advanced-radiotech.com.

Table of Contents

1. Introduction

The Flex 2JX radio remote control systems are designed for control of industrial equipment and machinery such as overhead traveling cranes, jib cranes, gantry cranes, tower cranes and other material handling equipment where wireless control is preferred.

Each Flex 2JX system consists of a transmitter belly box and receiver unit. Other standard-equipped accessories include one rechargeable battery pack, one charging station, one each transmitter waist and shoulder belt, one spare transmitter power key and user's manual.

List of notable features include:

* **62 user-programmable channels** – Advanced synthesized RF controls with 62 built-in channels.

* **Automatic channel scanning receiver** – No more hassle of climbing up the crane to change receiver channels. Transmitter channel can be changed directly on the transmitter via the LCD panel.

* **Transceiving RF modules** – The Flex 2JX system is capable of two-way communication between the transmitter and receiver.

* **LCD readout** – All settings and system status information are displayed and executed via the LCD panel on the transmitter and in receiver.

* **Goretex vent** – The transmitter is equipped with special Goretex vent to guard against water/vapor buildups inside transmitter enclosure.

* **Transmitter tilt function** – The transmitter is embedded with special tilt switch to guard against accidental crane movements when the transmitter is dropped.

* **Over one million unique serial numbers (20bit)** – Each and every Flex 2JX system has its own unique serial number, no repeats.

* **Advanced controls** – The Flex 2JX system utilizes dual advanced microprocessor controls with 32bit CRC and Hamming Code, which provide ultra-fast, safe, precise, and error-free encoding and decoding.

* **Unique I-Chip design** – The I-Chip functions in a way that is very similar to SIM cards used on mobile phones, with the ability to transfer system information and settings from one transmitter to another without the hassle of resetting the spares.

* **Fully sealed enclosures** – The transmitter and receiver enclosures are IP66 rated.

* **Infrared start/range limiting features** – The Flex 2JX transmitter is standard-equipped with infrared sensors for infrared startup and infrared range limiting operations.

* **Other features** – Tandem operation, multi-receiver operation, random access operation, pitch and catch operation, and many others.

* **Full compliance** – All systems are fully compliant with the FCC Part-15 Rules, European Directives (Safety, EMC, R&TTE and Machinery), and Industry Canada Specifications (IC).

2. Radio Controlled Safety

WARNINGS and CAUTIONS

Throughout this document WARNING and CAUTION statements have been deliberately placed to highlight items critical to the protection of personnel and equipment.

WARNING – A warning highlights an essential operating or maintenance procedure, practice, etc. which if not strictly observed, could result in injury or death of personnel, or long term physical hazards. Warnings are highlighted as shown below:

CAUTION – A caution highlights an essential operating or maintenance procedure, practice, etc. which if not strictly observed, could result in damage to, or destruction of equipment, or loss of functional effectiveness. Cautions are highlighted as shown below:

WARNINGS and CAUTIONS SHOULD NEVER BE DISREGARDED.

The safety rules in this section are not intended to replace any rules or regulations of any applicable local, state, or federal governing organizations. Always follow your local lockout and tagout procedure when maintaining any radio equipment. The following information is intended to be used in conjunction with other rules or regulations already in existence. It is important to read all of the safety information contained in this section before installing or operating the Radio Control System.

2.1 CRITICAL INSTALLATION CONSIDERATIONS

WARNING

PRIOR TO INSTALLATION AND OPERATION OF THIS EQUIPMENT, READ AND DEVELOP AN UNDERSTANDING OF THE CONTENTS OF THIS MANUAL AND THE OPERATION MANUAL OF THE EQUIPMENT OR DEVICE TO WHICH THIS EQUIPMENT WILL BE INTERFACED. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN SERIOUS INJURY OR DEATH AND DAMAGE TO EQUIPMENT.

ALL EQUIPMENT MUST HAVE A MAINLINE CONTACTOR INSTALLED AND ALL TRACKED CRANES, HOISTS, LIFTING DEVICES AND SIMILAR EQUIPMENT MUST HAVE A BRAKE INSTALLED. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN SERIOUS INJURY OR DEATH AND DAMAGE TO EQUIPMENT.

AN AUDIBLE AND/OR VISUAL WARNING MEANS MUST BE PROVIDED ON ALL REMOTE CONTROLLED EQUIPMENT AS REQUIRED BY CODE, REGULATION, OR INDUSTRY STANDARD. THESE AUDIBLE AND/OR VISUAL WARNING DEVICES MUST MEET ALL GOVERNMENTAL REQUIREMENTS. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN SERIOUS INJURY OR DEATH AND DAMAGE TO EQUIPMENT.

FOLLOW YOUR LOCAL LOCKOUT TAGOUT PROCEDURE BEFORE MAINTAINING ANY REMOTE CONTROLLED EQUIPMENT. ALWAYS REMOVE ALL ELECTRICAL POWER FROM THE CRANE, HOIST, LIFTING DEVICE OR SIMILAR EQUIPMENT BEFORE ATTEMPTING ANY INSTALLATION PROCEDURES. DE-ENERGIZE AND TAGOUT ALL SOURCES OF ELECTRICAL POWER BEFORE TOUCH-TESTING ANY EQUIPMENT. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN SERIOUS INJURY OR DEATH AND DAMAGE TO EQUIPMENT.

THE DIRECT OUTPUTS OF THIS PRODUCT ARE NOT DESIGNED TO INTERFACE DIRECTLY TO TWO STATE SAFETY CRITICAL MAINTAINED FUNCTIONS, I.E., MAGNETS, VACUUM LIFTS, PUMPS, EMERGENCY EQUIPMENT, ETC. A MECHANICALLY LOCKING INTERMEDIATE RELAY SYSTEM WITH SEPARATE POWER CONSIDERATIONS MUST BE PROVIDED. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN SERIOUS INJURY OR DEATH OR DAMAGE TO EQUIPMENT.

2.2 GENERAL

Radio controlled material handling equipment operates in several directions. Cranes, hoists, lifting devices and other material handling equipment can be large, and operate at high speeds. Quite frequently, the equipment is operated in areas where people are working in close proximity to the material handling equipment. **The operator must exercise extreme caution at all times**. Workers must constantly be alert to avoid accidents. The following recommendations have been included to indicate how careful and thoughtful actions may prevent injuries, damage to equipment, or even save a life.

2.3 PERSONS AUTHORIZED TO OPERATE RADIO CONTROLLED CRANES

Only properly trained persons designated by management should be permitted to operate radio controlled equipment.

Radio controlled cranes, hoists, lifting devices and other material handling equipment should not be operated by any person who cannot read or understand signs, notices and operating instructions that pertain to the equipment.

Radio controlled equipment should not be operated by any person with insufficient eyesight or hearing or by any person who may be suffering from a disorder or illness, is taking any medication that may cause loss of equipment control, or is under the influence of alcohol or drugs.

2.4 SAFETY INFORMATION AND RECOMMENDED TRAINING FOR RADIO CONTROLLED EQUIPMENT OPERATORS

Anyone being trained to operate radio controlled equipment should possess as a minimum the following knowledge and skills before using the radio controlled equipment.

The operator should:

- have knowledge of hazards pertaining to equipment operation
- have knowledge of safety rules for radio controlled equipment
- have the ability to judge distance of moving objects
- know how to properly test prior to operation
- be trained in the safe operation of the radio transmitter as it pertains to the crane, hoist, lifting device or other material handling equipment being operated
- have knowledge of the use of equipment warning lights and alarms
- have knowledge of the proper storage space for a radio control transmitter when not in use
- be trained in transferring a radio control transmitter to another person
- be trained how and when to report unsafe or unusual operating conditions
- test the transmitter emergency stop and all warning devices prior to operation; testing should be done on each shift, without a load
- be thoroughly trained and knowledgeable in proper and safe operation of the crane, hoist, lifting device, or other material handling equipment that utilizes the radio control
- know how to keep the operator and other people clear of lifted loads and to avoid “pinch” points
- continuously watch and monitor status of lifted loads
- know and follow cable and hook inspection procedures
- know and follow the local lockout and tagout procedures when servicing radio controlled equipment
- know and follow all applicable operating and maintenance manuals, safety procedures, regulatory requirements, and industry standards and codes

The operator shall not:

- lift or move more than the rated load
- operate the material handling equipment if the direction of travel or function engaged does not agree with what is indicated on the controller
- use the crane, hoist or lifting device to lift, support or transport people
- lift or carry any loads over people
- operate the crane, hoist or lifting device unless all persons, including the operator, are and remain clear of the supported load and any potential pinch points
- operate a crane, hoist or lifting device when the device is not centered over the load
- operate a crane, hoist or lifting device if the chain or wire rope is not seated properly in the sprockets, drum or sheave
- operate any damaged or malfunctioning crane, hoist, lifting device or other material handling equipment

- change any settings or controls without authorization and proper training
- remove or obscure any warning or safety labels or tags
- leave any load unattended while lifted
- leave power on the radio controlled equipment when the equipment is not in operation
- operate any material handling equipment using a damaged controller because the unit may be unsafe
- operate manual motions with other than manual power
- operate radio controlled equipment when low battery indicator is on

WARNING

THE OPERATOR SHOULD NOT ATTEMPT TO REPAIR ANY RADIO CONTROLLER. IF ANY PRODUCT PERFORMANCE OR SAFETY CONCERNS ARE OBSERVED, THE EQUIPMENT SHOULD IMMEDIATELY BE TAKEN OUT OF SERVICE AND BE REPORTED TO THE SUPERVISOR. DAMAGED AND INOPERABLE RADIO CONTROLLER EQUIPMENT SHOULD BE RETURNED TO MAGNETEK FOR EVALUATION AND REPAIR. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN SERIOUS INJURY OR DEATH AND DAMAGE TO EQUIPMENT.

2.5 TRANSMITTER UNIT

Transmitter switches should never be mechanically blocked ON or OFF. When not in use, the operator should turn the transmitter OFF. A secure storage space should be provided for the transmitter unit, and the transmitter unit should always be placed there when not in use. This precaution will help prevent unauthorized people from operating the material handling equipment.

Spare transmitters should be stored in a secure storage space and only removed from the storage space after the current transmitter in use has been turned OFF, taken out of the service area and secured.

2.6 PRE-OPERATION TEST

At the start of each work shift, or when a new operator takes control of the crane, operators should do, as a minimum, the following steps before making lifts with any crane or hoist:

Test all warning devices.

Test all direction and speed controls.

Test the transmitter emergency stop.

2.7 BATTERIES

WARNING

KNOW AND FOLLOW PROPER BATTERY HANDLING, CHARGING AND DISPOSAL PROCEDURES. IMPROPER BATTERY PROCEDURES CAN CAUSE BATTERIES TO EXPLODE OR DO OTHER SERIOUS DAMAGE. FAILURE TO FOLLOW THIS WARNING COULD RESULT IN SERIOUS INJURY OR DEATH AND DAMAGE TO EQUIPMENT.

2.8 BATTERY HANDLING

Use only battery packs provided by ARC for the specific product.

Do not dispose of a battery pack in fire; it may explode.

Do not attempt to open the battery pack.

Do not short circuit the battery.

Keep the battery pack environment cool during charging operation and storage (i.e., not in direct sunlight or close to a heating source).

2.9 BATTERY CHARGING

For those transmitters equipped with battery chargers, please familiarize all users with the instructions of the charger before attempting to use.

Do not attempt to charge non-rechargeable battery packs.

Avoid charging partially discharged rechargeable batteries to help prolong battery cycle life.

Avoid charging the battery pack for more than 24 hours at a time.

Do not charge batteries in a hazardous environment.

Do not short the charger unit.

Do not attempt to charge a damaged battery.

Use only ARC charger unit for the appropriate battery pack.

Do not attempt to use a battery pack that is leaking, swollen or corroded.

Charger units are not intended for outdoor use.

2.10 BATTERY DISPOSAL

Before disposing of battery packs consult local and governmental regulatory requirements for proper disposal procedure.

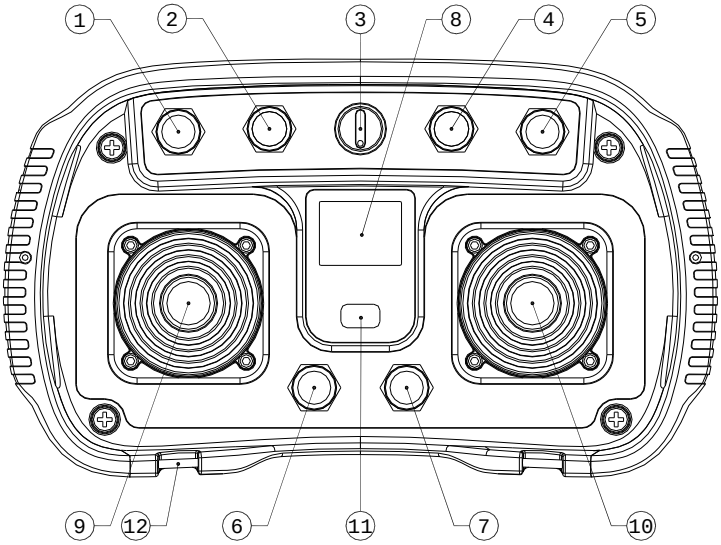
2.11 SPECIFIC SYSTEM WARNINGS

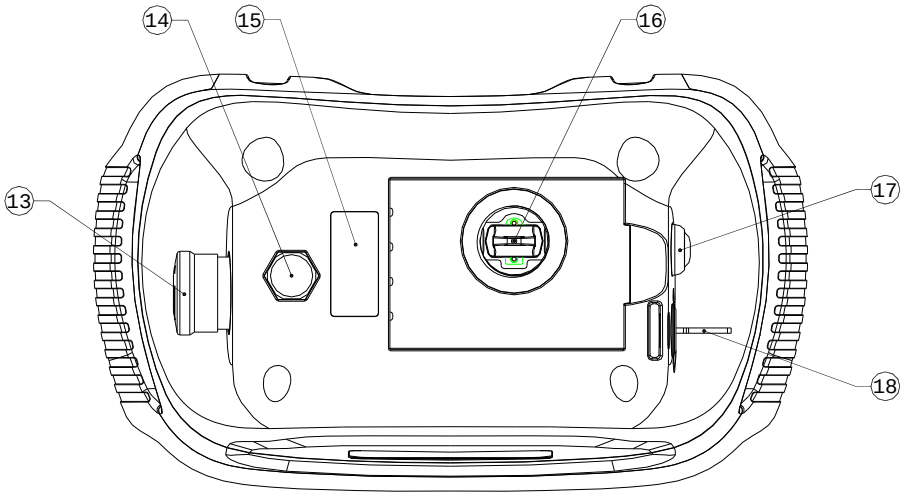
Below are some specific operating safety tips that should be strictly followed when operating a Flex 2JX system:

1. Check the Status LCD on the transmitter for any signs of low battery power.
2. Check the Status LCD on the transmitter for any signs of irregularities.
3. Make sure the system is not set to the same channel as any other Flex systems in use within a distance of 300 meters (900 feet).
4. Never operate equipment with two transmitters at the same time unless they are programmed to do so.

3. General System Information

3.1 Transmitter

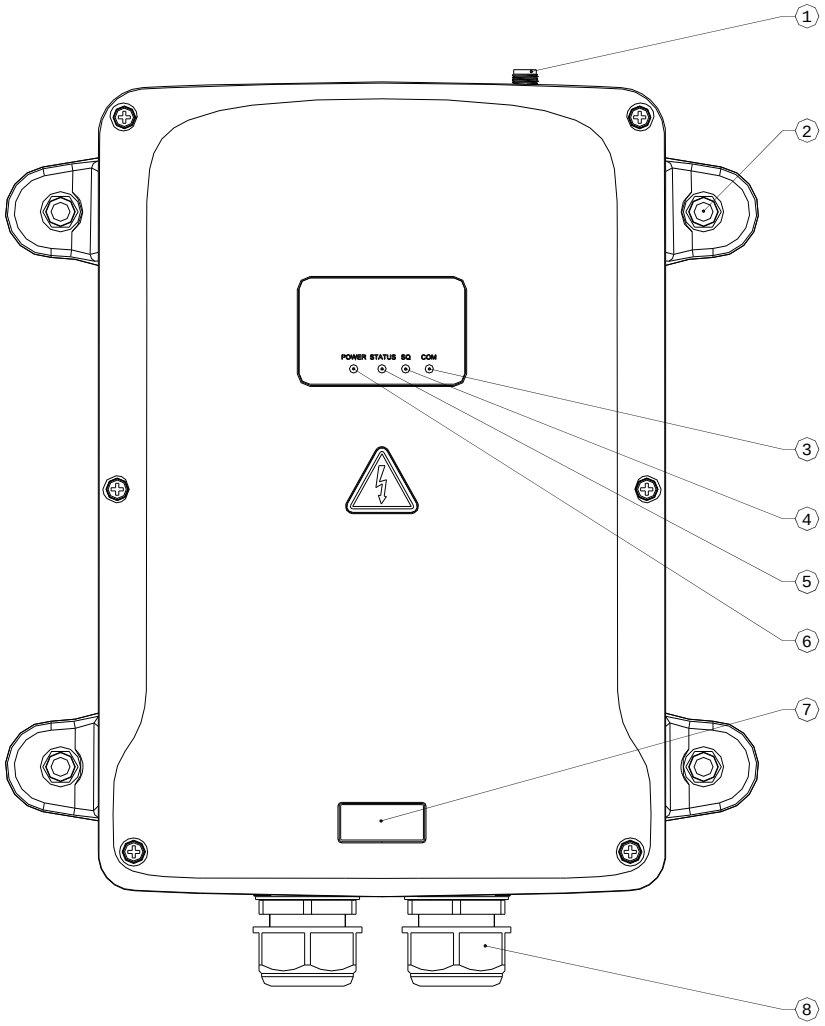




1. SW1 button or switch
2. SW2 button or switch
3. SW3 button or switch
4. SW4 button or switch
5. SW5 button or switch
6. SW6 button
7. SW7 button
8. LCD screen
9. Left (L) joystick
10. Right (R) joystick
11. Infrared sensor
12. Shoulder strap clip
13. E-Stop button
14. Goretex vent
15. System information
16. I-Chip port
17. START button
18. Power key

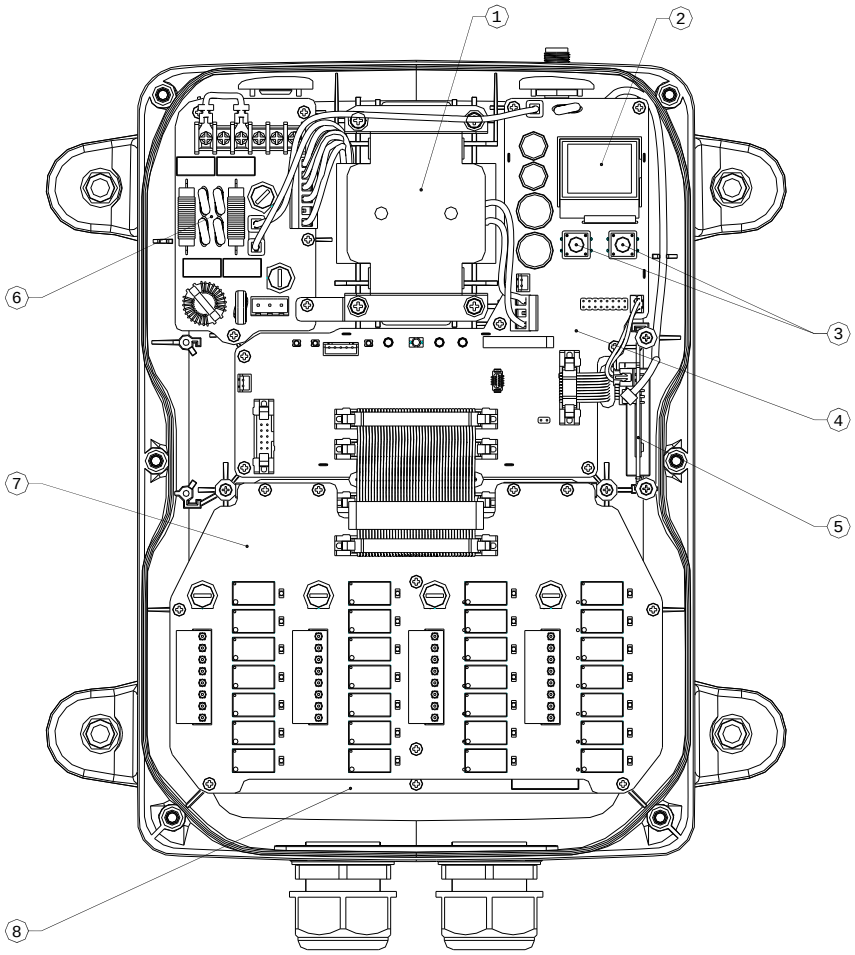
3.2 Receiver

3.2.1 External Illustration



1. External antenna jack (optional)
2. Shock mount
3. COM LED display
4. SQ LED display
5. Status LED display
6. Power LED display
7. System information
8. Cord grip

3.2.2 Internal Illustration



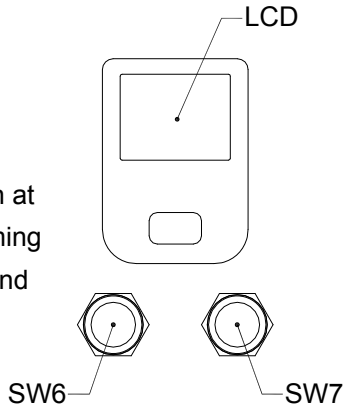
1. Power transformer
2. LCD display
3. PS1 & PS2 programming buttons
4. Decoder module
5. Receiving module
6. AC line filter board
7. Top relay board
8. Bottom relay board

4. Function Settings

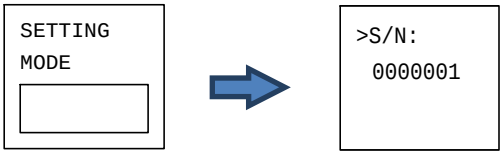
4.1 Transmitter

4.1.1 Programming Procedure

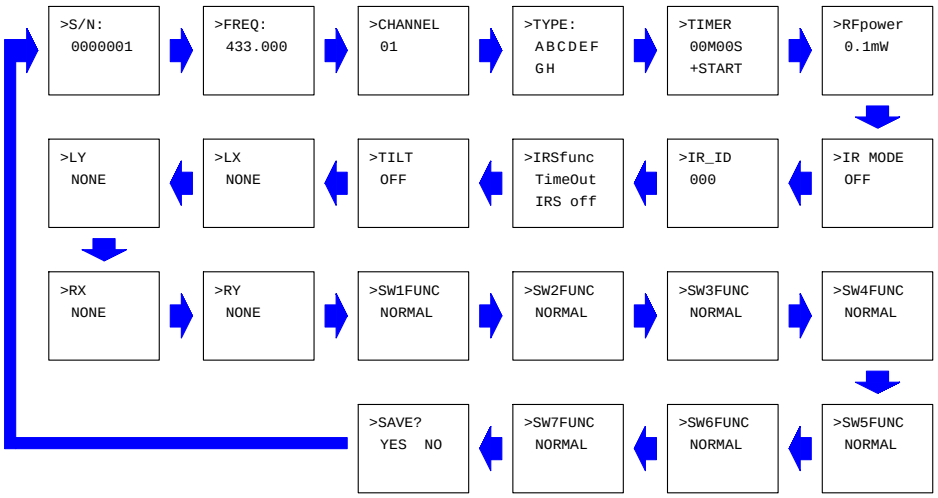
How to enter transmitter programming mode:



1) Turn on the transmitter power switch.
2) Do not press the green START button.
3) Press both SW6 and SW7 buttons below the LCD screen at the same time for up to 5 seconds to enter the Programming Mode. Setting Mode screen will show up for a brief second followed by the Serial Number screen (see below).



4) Serial number and frequency range can not be reprogrammed directly on the transmitter so press SW7 button repeatedly until you see the Channel Setting screen and so on.

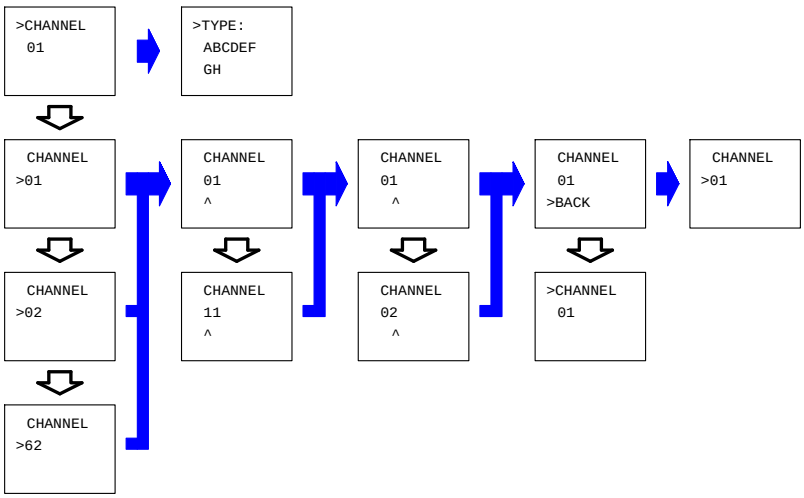


5) Button functions:

SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.
Press and hold SW7 and then SW6 to go back to the previous main menu.

4.1.2 Transmitter Channel

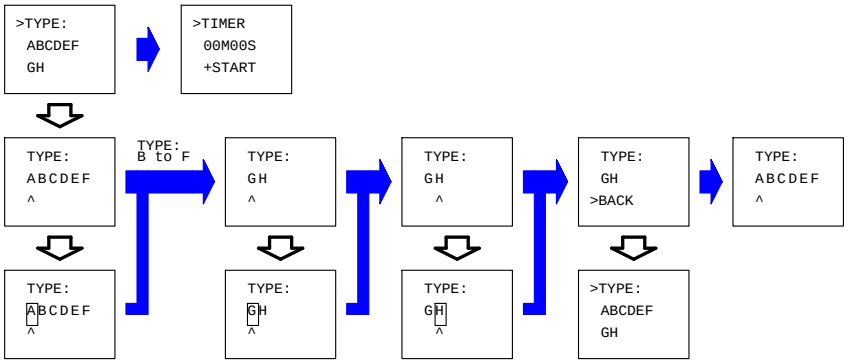
SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.



When transmitter channel is changed make sure the receiver channel is also set to the newly selected channel. Please refer to section 7.3 automatic channel scanning operating procedure if the receiver is set to “scan all channels” (see section 4.2.4).

4.1.3 Transmitter Type

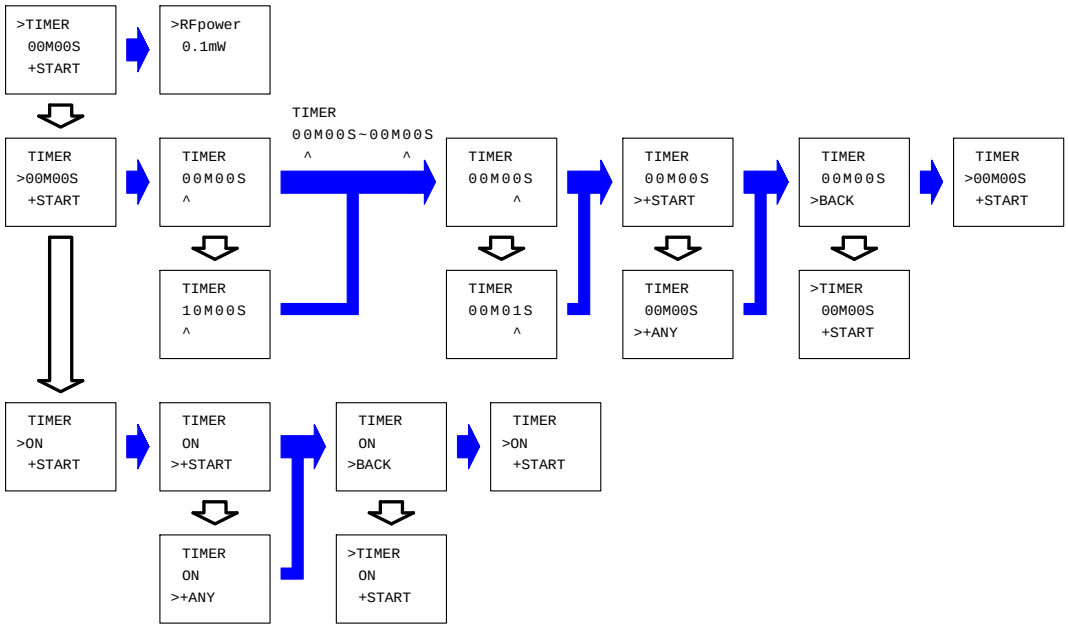
SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.



Transmitter Type is associated with functions such as tandem operation, random access operation, multi-receiver operation, etc... Please do not alter the factory settings unless authorized to do so.

4.1.4 Transmitter Inactivity Timer

SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.



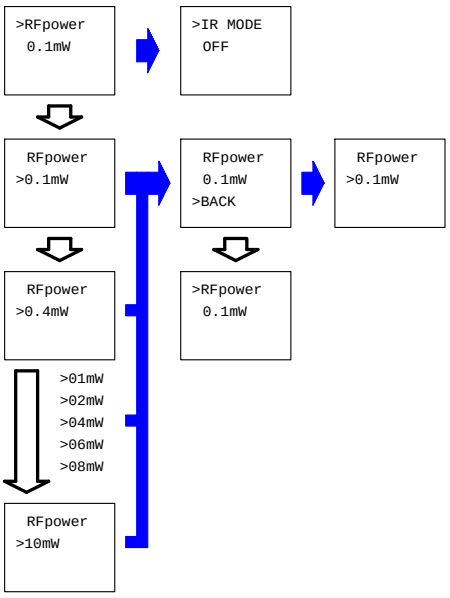
Transmitter inactivity timer is for setting receiver mains disconnect time when the transmitter is not in operation for a certain period of time. When set to 5 minutes (05M00S), the receiver mains are disconnected at 5.0 minutes after last transmitter operation.

Select “ON” means the receiver mains stay on constantly (inactivity timer disabled) until the e-stop button is pressed or when the transmitter power is switched off.

Select “+START” means after 5 minutes of transmitter inactivity you must press the green START button to continue operation. Select “+ANY” means after 5 minutes of transmitter inactivity operate the joysticks or buttons (not switches) to continue operation.

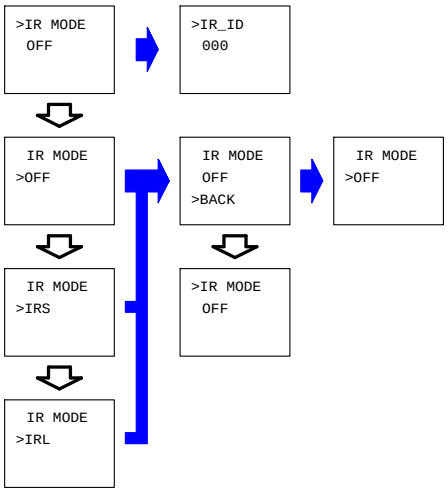
4.1.5 Transmitter Output Power

SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.



4.1.6 Transmitter Infrared Mode

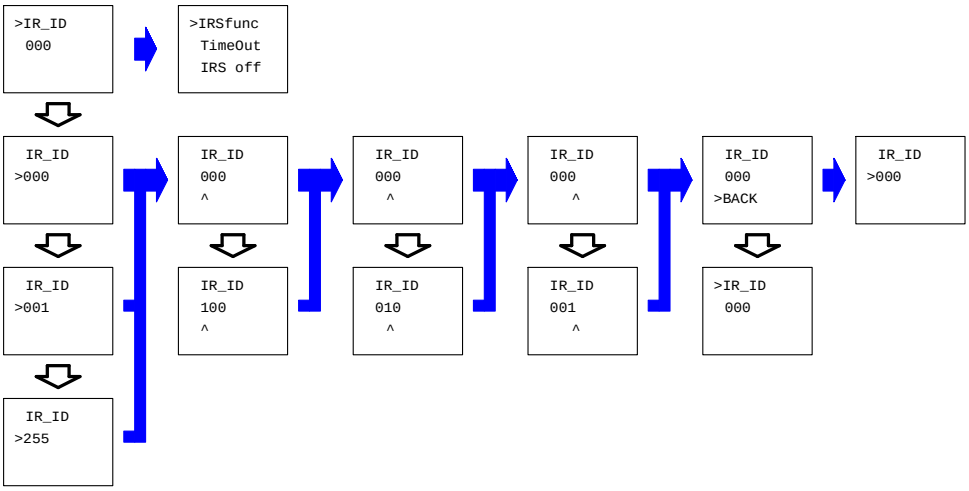
SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.



Select “OFF” to disable infrared function.
Select “IRS” to enable infrared START function.
Select “IRL” to enable infrared range limiting function.

4.1.7 Transmitter Infrared ID

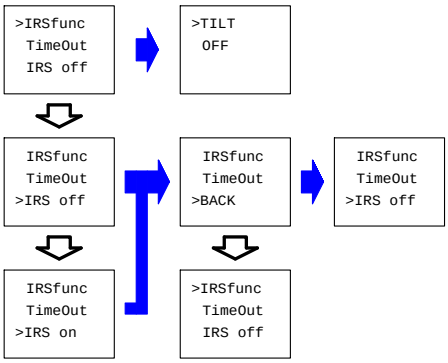
SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.



Make sure the infrared module on crane is set to same ID code as the transmitter.
Select “000” disables the ID code function hence any types of infrared modules can be used.

4.1.8 Transmitter Infrared START Function

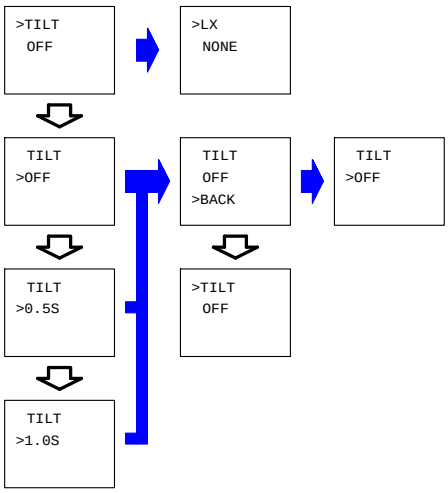
SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.



Select “IRS ON” if infrared START is required after every transmitter timeout (see section 4.1.4).
Select “IRS OFF” if infrared START is not required after every transmitter timeout.

4.1.9 Transmitter Tilt Function

SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.

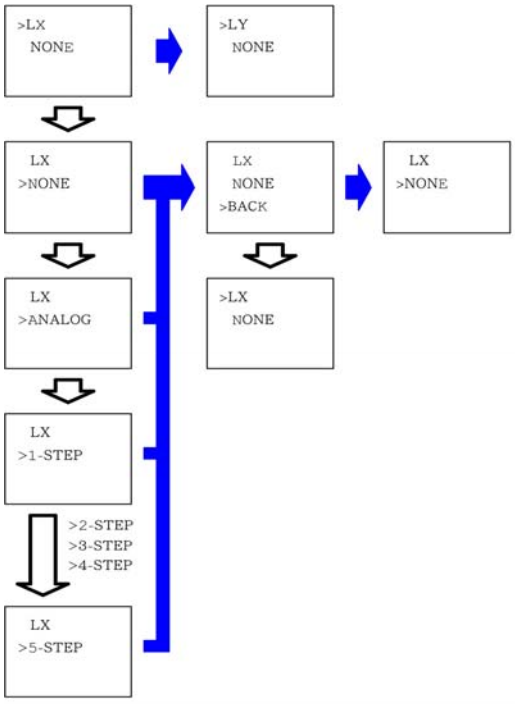


When TILT function is set to 0.5s (more sensitive) or 1.0s (less sensitive), the receiver mains are disconnected (opened) when the transmitter is tilted for more than 35~40 degrees. Select OFF disables the TILT function.

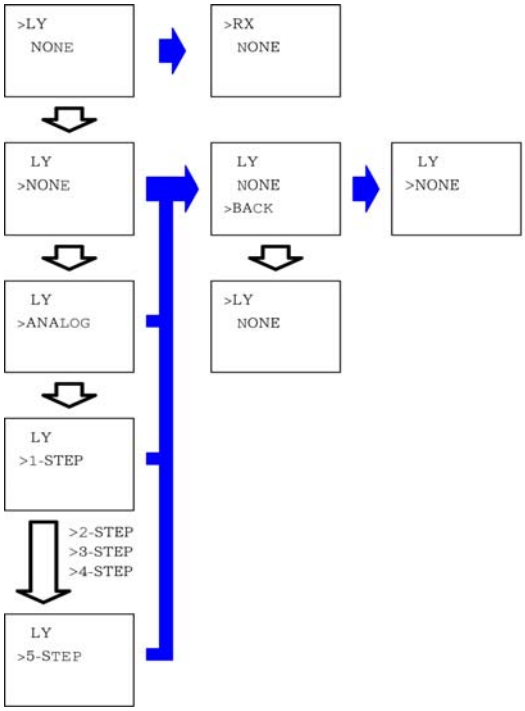
4.1.10 Joystick Configuration

SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.

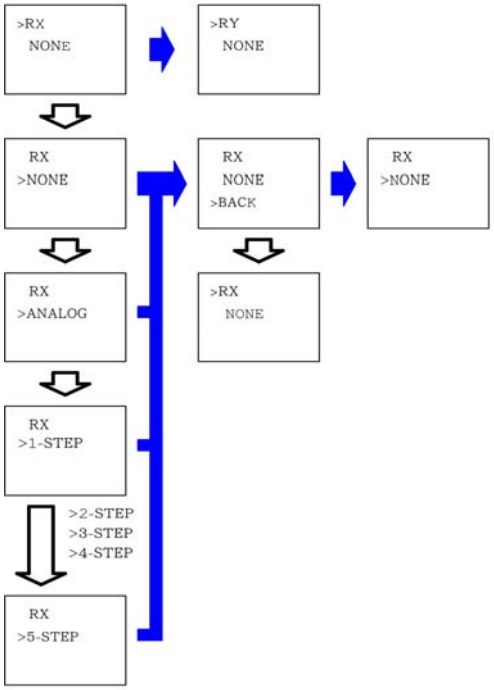
Left Joystick X Axis



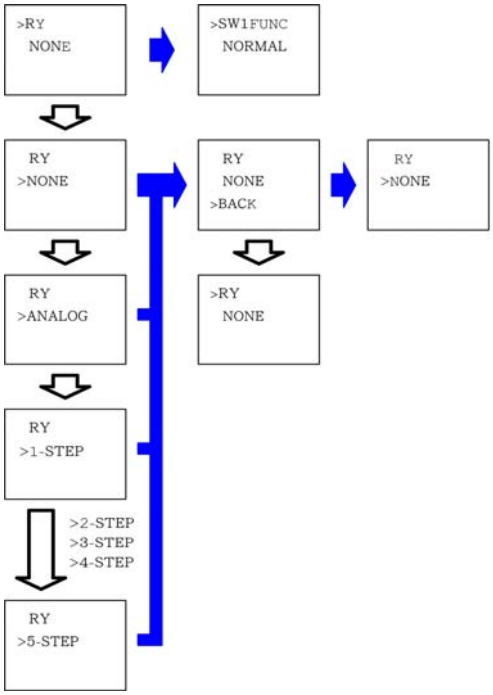
Left Joystick Y Axis



Right Joystick X Axis

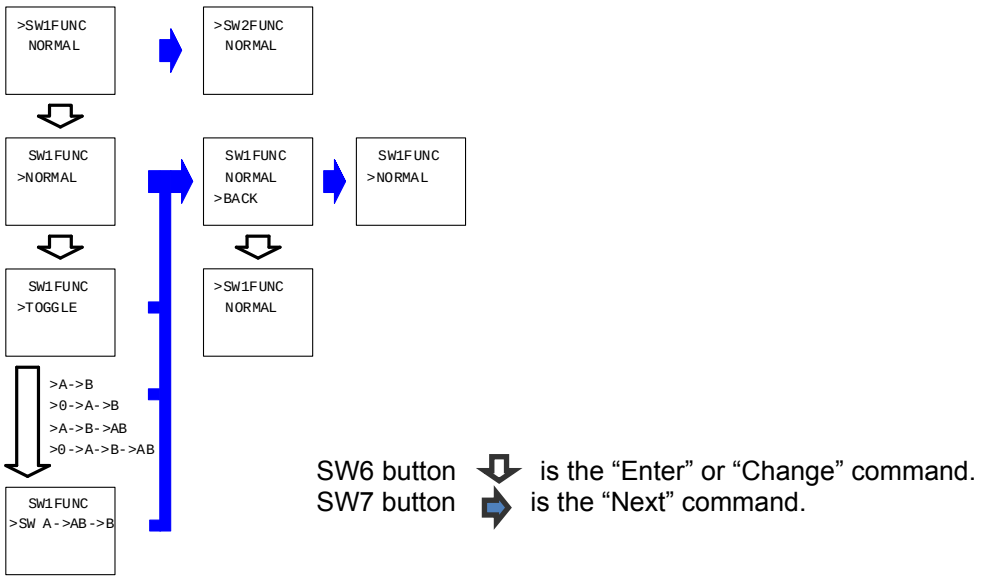


Right Joystick Y Axis



Set each joystick’s number of steps and output type (analog-stepless or digital-stepped) according to the hardware installed.

4.1.11 SW1 Button Function

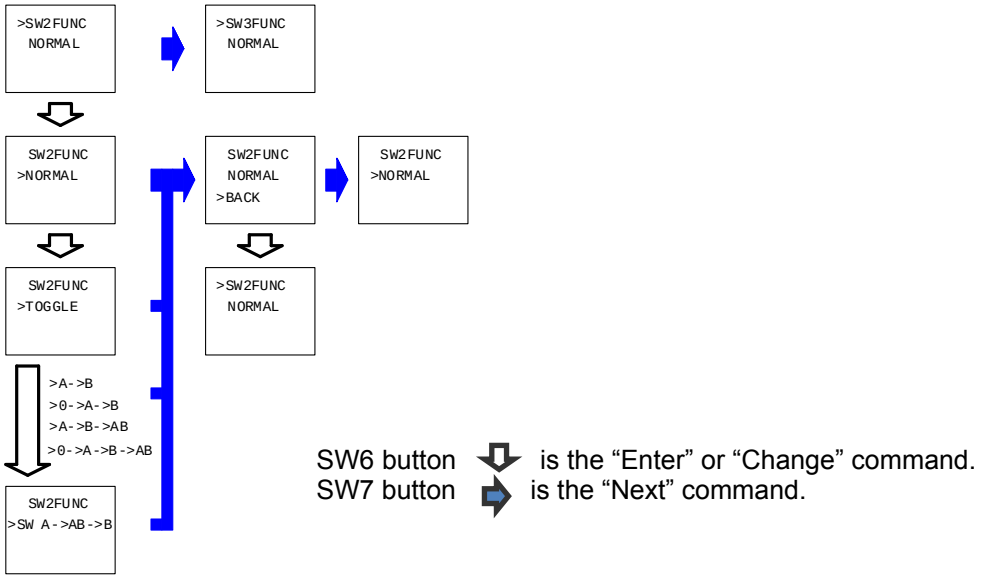


Button: Select "NORMAL" for momentary output relay contact and "TOGGLE" for transmitter toggled output relay contact. Select "A→B" or "0→A→B" or "A→B→AB" or "0→A→B→AB" for Select A/B, off/A/B, A/B/AB or off/A/B/AB output relay contacts (4 variants).

Rocker Switch: Select "NORMAL" for 2-stage On-On or 3-stage On-Off-On output relay contacts. Select "SW A→AB→B" for Select A/A+B/B output relay contacts.

Important: If SW1 is set to one of the above settings then the SW1 output relay function in receiver (see section 4.2.16) must set to "**NORMAL**" or "**ABUS**" (Reversed Logic A/A+B/B).

4.1.12 SW2 Button Function

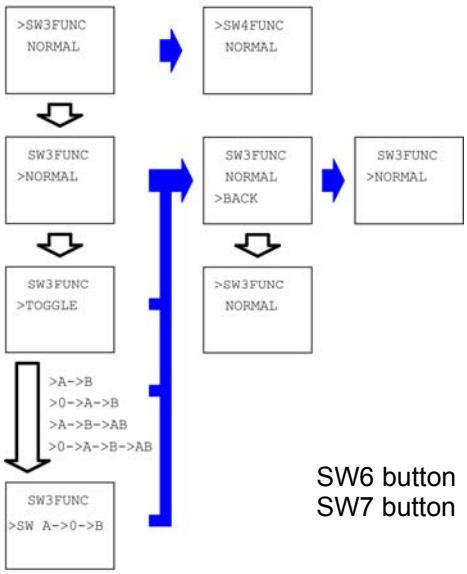


Button: Select "NORMAL" for momentary output relay contact and "TOGGLE" for transmitter toggled output relay contact. Select "A→B" or "0→A→B" or "A→B→AB" or "0→A→B→AB" for Select A/B, off/A/B, A/B/AB or off/A/B/AB output relay contacts (4 variants).

Rocker Switch: Select "NORMAL" for 2-stage On-On or 3-stage On-Off-On output relay contacts. Select "SW A→AB→B" for Select A/A+B/B output relay contacts.

Important: If SW2 is set to one of the above settings then the SW2 output relay function in receiver (see section 4.2.17) must set to "**NORMAL**" or "**ABUS**" (Reversed Logic A/A+B/B).

4.1.13 SW3 Button Function

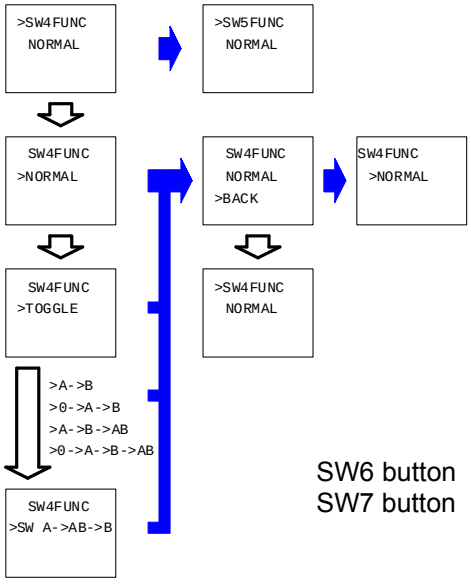


Button: Select “NORMAL” for momentary output relay contact and “TOGGLE” for transmitter toggled output relay contact. Select “A→B” or “0→A→B” or “A→B→AB” or “0→A→B→AB” for Select A/B, off/A/B, A/B/AB or off/A/B/AB output relay contacts (4 variants).

Rotary Switch: Select “NORMAL” for 2-stage A/B or 3-stage A/A+B/B rotary select switch. Select “SW A→0→B” for 3-stage On-Off-On output relay contacts.

Important: If SW3 is set to one of the above settings then the SW3 output relay function in receiver (see section 4.2.18) must set to “**NORMAL**” or “**ABUS**” (Reversed Logic A/A+B/B).

4.1.14 SW4 Button Function

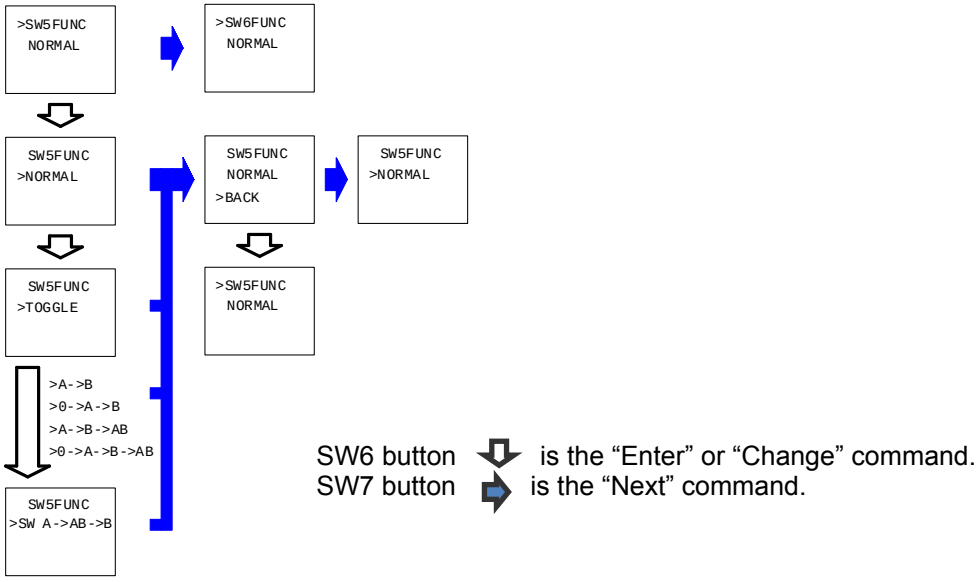


Button: Select “NORMAL” for momentary output relay contact and “TOGGLE” for transmitter toggled output relay contact. Select “A→B” or “0→A→B” or “A→B→AB” or “0→A→B→AB” for Select A/B, off/A/B, A/B/AB or off/A/B/AB output relay contacts (4 variants).

Rocker Switch: Select “NORMAL” for 2-stage On-On or 3-stage On-Off-On output relay contacts. Select “SW A→AB→B” for Select A/A+B/B output relay contacts.

Important: If SW4 is set to one of the above settings then the SW4 output relay function in receiver (see section 4.2.20) must set to “**NORMAL**” or “**ABUS**” (Reversed Logic A/A+B/B).

4.1.15 SW5 Button Function



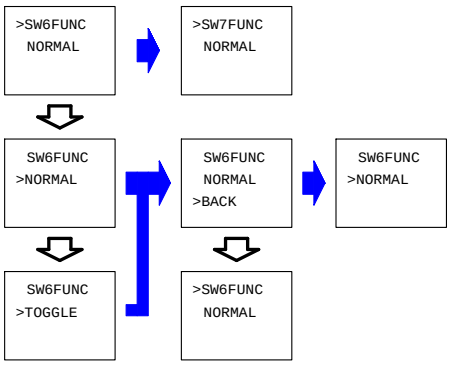
Button: Select "NORMAL" for momentary output relay contact and "TOGGLE" for transmitter toggled output relay contact. Select "A→B" or "0→A→B" or "A→B→AB" or "0→A→B→AB" for Select A/B, off/A/B, A/B/AB or off/A/B/AB output relay contacts (4 variants).

Rocker Switch: Select "NORMAL" for 2-stage On-On or 3-stage On-Off-On output relay contacts. Select "SW A→AB→B" for Select A/A+B/B output relay contacts.

Important: If SW5 is set to one of the above settings then the SW5 output relay function in receiver (see section 4.2.21) must set to "**NORMAL**" or "**ABUS**" (Reversed Logic A/A+B/B).

4.1.16 SW6 Button Function

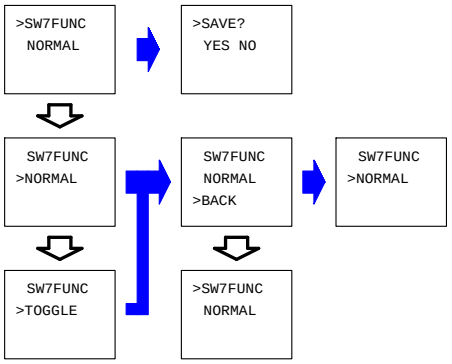
SW6 button is the "Enter" or "Change" command.
SW7 button is the "Next" command.



Button: Select "NORMAL" for normal momentary relay output and "TOGGLE" for transmitter toggled relay output.

4.1.17 SW7 Button Function

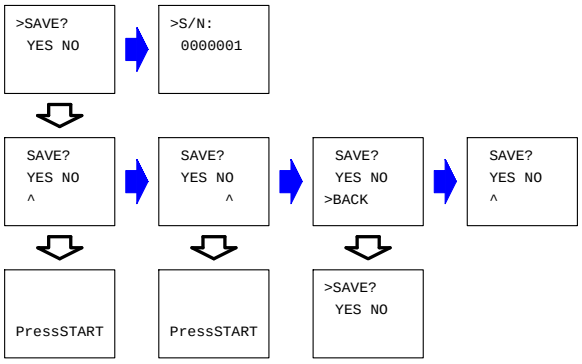
SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.



Button: Select “NORMAL” for normal momentary relay output and “TOGGLE” for transmitter toggled relay output.

4.1.18 Save Function

SW6 button is the “Enter” or “Change” command.
SW7 button is the “Next” command.

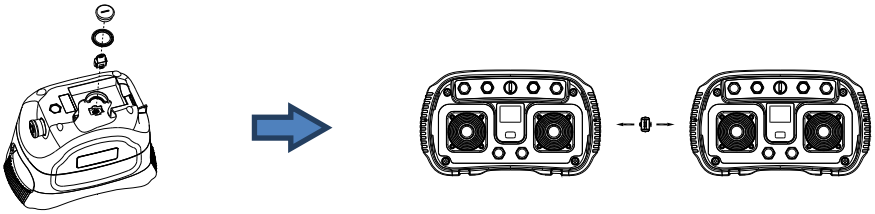


When you see the “PressSTART” screen it means the information is saved or not saved.

The system will exit the programming mode after 5 minutes of inactivity (info not saved).

4.1.19 I-Chip Installation

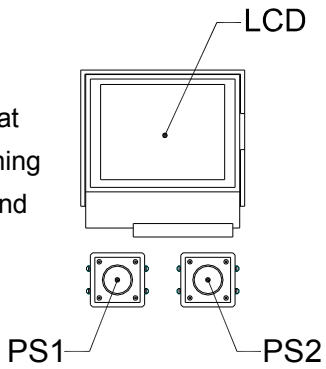
Use a coin to unscrew the I-Chip cover by rotating it clockwise. The I-Chip is located under the battery compartment (see below).



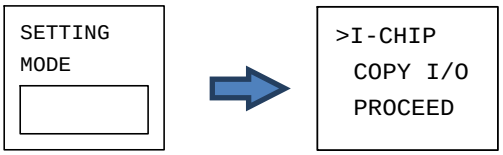
4.2 Receiver Unit

4.2.1 Programming Procedures

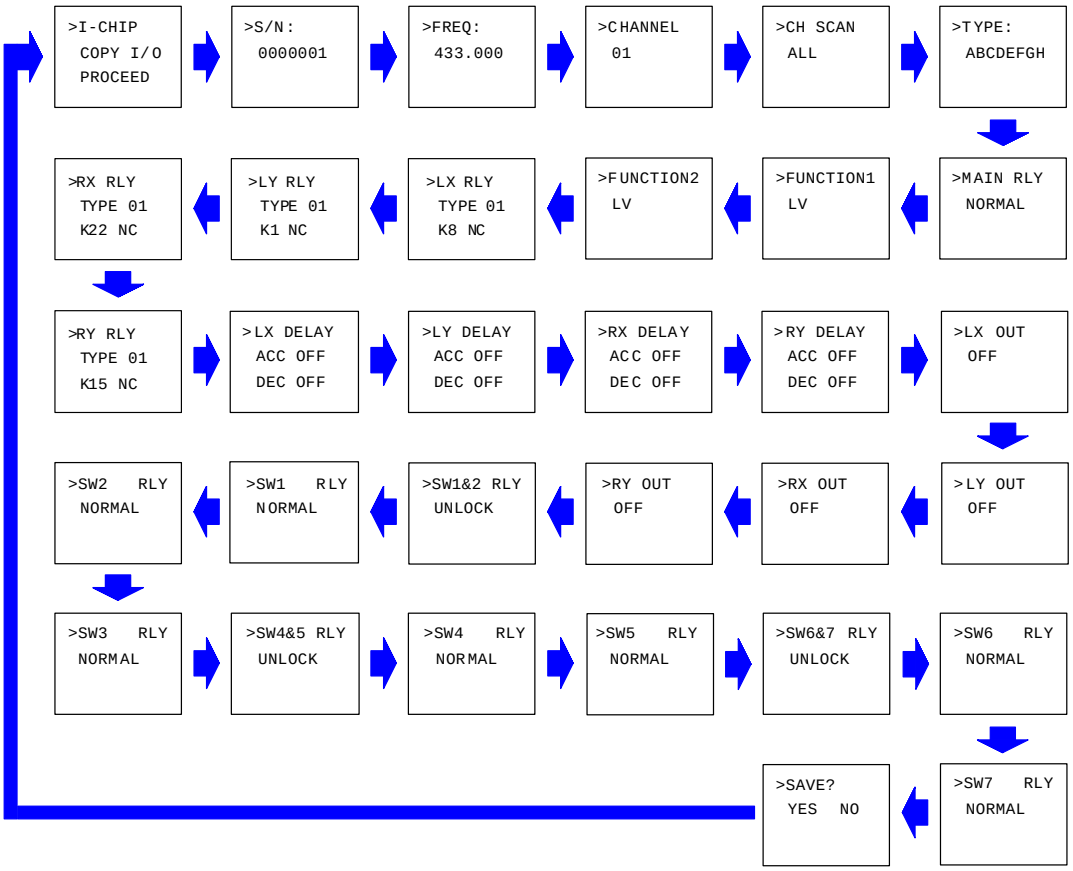
How to enter receiver programming mode:



1) Switch on the receiver power.
2) Press both PS1 and PS2 buttons below the LCD screen at the same time for up to 5 seconds to enter the Programming Mode. Setting Mode screen will show up for a brief second followed by the I-Chip Copy I/O (see below).



3) Serial number and frequency range can not be reprogrammed directly on the transmitter so press PS2 button repeatedly until you see the Channel Setting screen and so on.

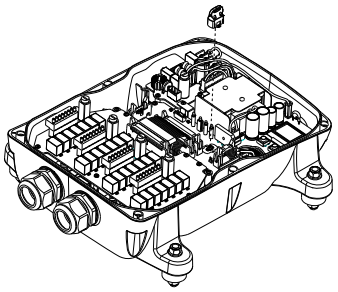


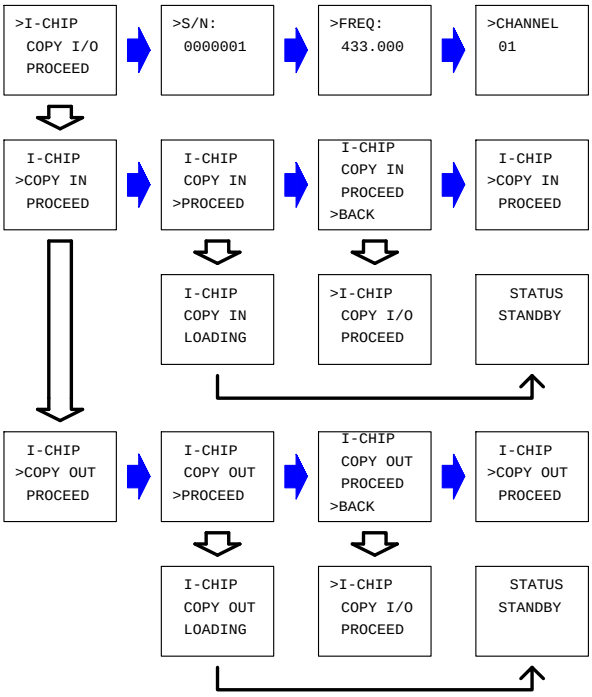
4) Button functions:

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.
Press and hold PS2 and then PS1 to go back to the previous main menu.

4.2.2 I-Chip Programming

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.





I-CHIP NOT MATCH — Incorrect I-Chip type

I-CHIP NOT CONNECT — I-Chip not installed correctly

Select “COPY IN” to transfer I-Chip information from transmitter to receiver.

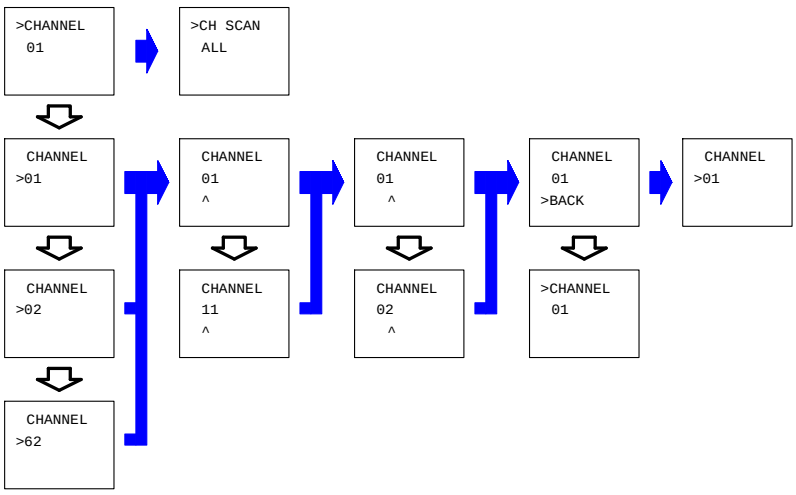
Select “COPY OUT” to transfer I-Chip information from receiver to transmitter.

Select “Proceed” to begin transfer.

When transferring is completed the screen will display “STATUS STANDBY”.

4.2.3 Receiver Channel

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.

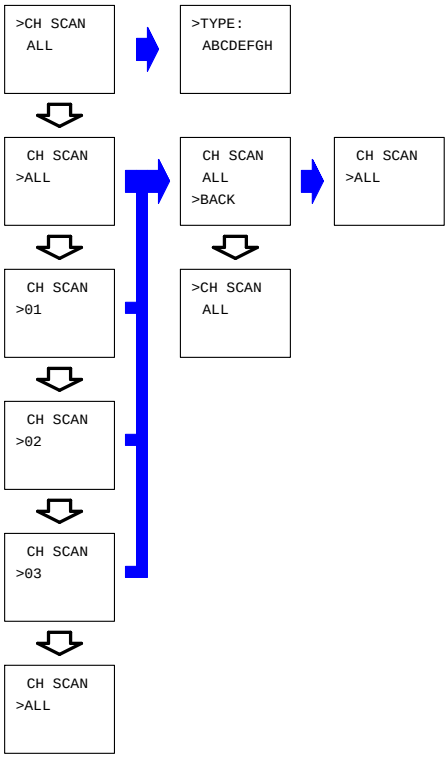


When receiver channel is changed manually make sure the transmitter channel is also set to the newly selected channel.

4.2.4 Receiver Channel Scanning

PS1 button is the “Enter” or “Change” command.

PS2 button is the “Next” command.



Select “01” the receiver only scans the channel set on section 4.2.3.

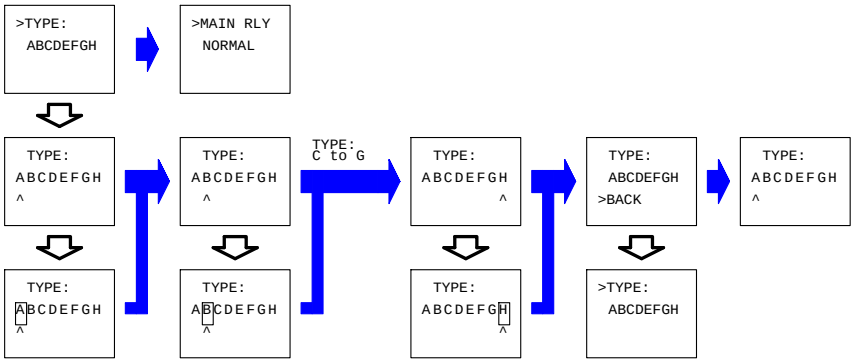
Select “02” the receiver scans the channel set on section 4.2.3 plus the next channel up (scans channel N and channel N+1).

Select “03” the receiver scans the channel set on section 4.2.3 plus the next two channels up (scans channel N, channel N+1 and channel N+2).

Select “ALL” the receiver scans all 62 channels.

4.2.5 Receiver Type

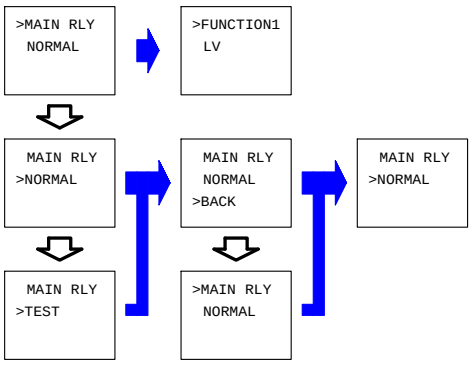
PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



Receiver Type is associated with functions such as tandem operation, random access operation, multi-receiver operation, etc… Please do not alter the factory settings unless authorized to do so.

4.2.6 Main Relay Function

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



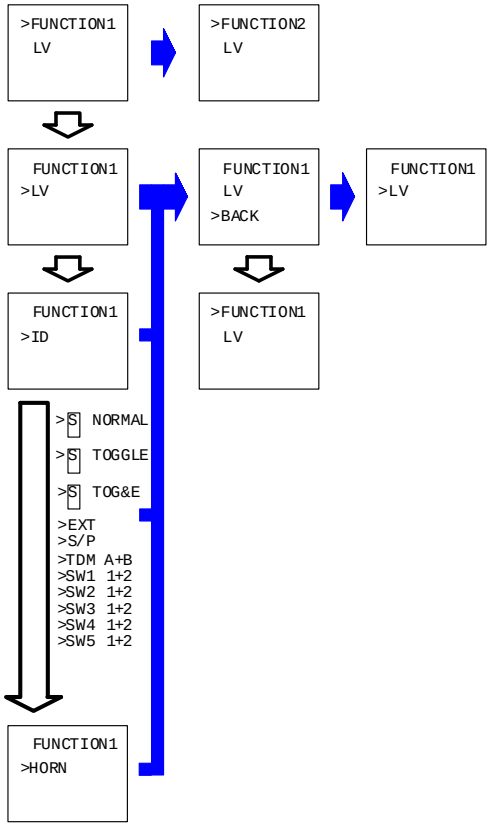
Select “NORMAL” for normal operation (receiver mains and all other outputs enabled).

Select “TEST” for system testing (receiver mains disabled and all other outputs enabled).

4.2.7 Function Relay #1

PS1 button is the “Enter” or “Change” command.

PS2 button is the “Next” command.



Select “LV” for receiver low voltage external warning output.

Select “ID” for receiver ID output (works simultaneously with all joystick motions and interlocking momentary contacts).

Select “NORMAL” the output relay becomes momentary contact when START button is pressed.

Select “TOGGLE” the output relay becomes toggled contact when START button is pressed.

Select “TOGGLE&E” the output relay becomes toggled contact affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “EXT” the output relay works simultaneously with the receiver mains.

Select “S/P” the output relay closes when the green START button is pressed and opens only when transmitter power is switched off, not e-stop pressed.

Select “TDM A+B” the output relay closes when the 3-stage tandem rotary key switch on the SW3 slot is rotated to A+B position for dual crane A+B tandem operation.

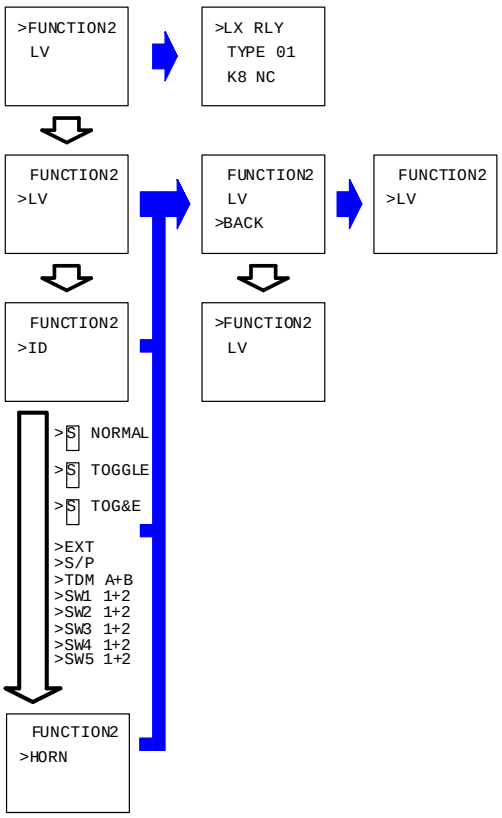
Select “SW1 1+2… SW5 1+2” the output relay closes when a 3-stage rocker switch, a 3-stage rotary switch or a 3-stage A/B/A+B button (see section 4.1.11 ~ section 4.1.15) on SW1 ~ SW5 slot is rotated to A+B position for dual hoist/trolley A+B tandem operation. Only 1 switch or button can be assigned to each Function relay.

Select “HORN” the output relay closes for up to 3 seconds when the green START button is pressed after every transmitter power on and then becomes a momentary contact thereafter.

4.2.8 Function Relay #2

PS1 button is the “Enter” or “Change” command.

PS2 button is the “Next” command.



Select “LV” for receiver low voltage external warning output.

Select “ID” for receiver ID output (works simultaneously with all joystick motions and interlocking momentary contacts).

Select “NORMAL” the output relay becomes momentary contact when START button is pressed.

Select “TOGGLE” the output relay becomes toggled contact when START button is pressed.

Select “TOGGLE&E” the output relay becomes toggled contact affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “EXT” the output relay works simultaneously with the receiver mains.

Select “S/P” the output relay closes when the green START button is pressed and opens only when transmitter power is switched off, not e-stop pressed.

Select “TDM A+B” the output relay closes when the 3-stage tandem rotary key switch on the SW3 slot is rotated to A+B position for dual crane A+B tandem operation.

Select “SW1 1+2… SW5 1+2” the output relay closes when a 3-stage rocker switch, a 3-stage rotary switch or a 3-stage A/B/A+B button (see section 4.1.11 ~ section 4.1.15) on SW1 ~ SW5 slot is rotated to A+B position for dual hoist/trolley A+B tandem operation. Only 1 switch or button can be assigned to each Function relay.

Select “HORN” the output relay closes for up to 3 seconds when the green START button is pressed after every transmitter power on and then becomes a momentary contact thereafter.

4.2.9 Output Relay Configurations

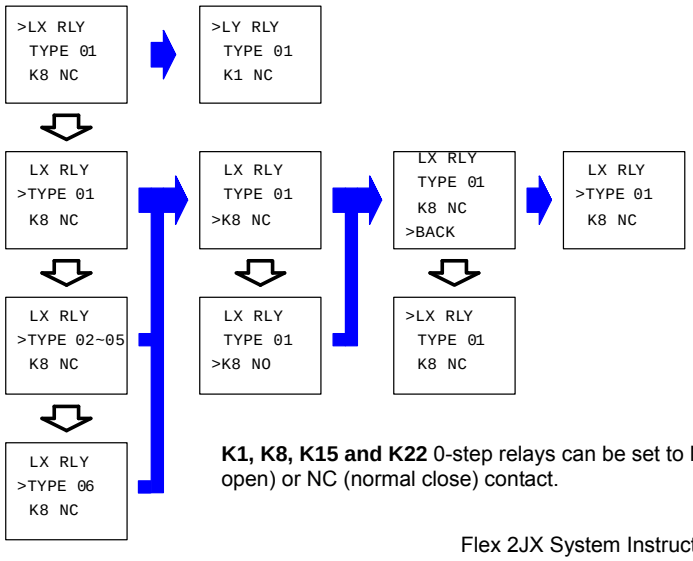
Below chart and settings are various types of shared (F/R) and separate (F or R) acceleration relay closure at 1st, 2nd, 3rd, 4th and 5th steps.

Output Relay / Type	LY LX RY RX	K2 K9 K16 K23	K3 K10 K17 K24	K4 K11 K18 K25	K5 K12 K19 K26	K6 K13 K20 K27	K7 K14 K21 K28
01	at 1st Step at 2nd Step at 3rd Step at 4th Step at 5th Step	F1 F1 F1 F1 F1	or R1 or R1 or R1 or R1 or R1	 F/R2 F/R2 F/R2 F/R2	 F/R3 F/R3 F/R3	 F/R4 F/R4	 F/R5
02	at 1st Step at 2nd Step at 3rd Step at 4th Step at 5th Step	F1 F1 F1 F1 F1	or R1 or R1 or R1 or R1 or R1	 F/R2 	 F/R3 	 F/R4 	 F/R5
03	at 1st Step at 2nd Step at 3rd Step at 4th Step	F F F F	or R or R or R or R	F/R1 F/R1 F/R1 F/R1	 F/R2 F/R2 F/R2	 F/R3 F/R3	 F/R4
04	at 1st Step at 2nd Step at 3rd Step at 4th Step	F F F F	or R or R or R or R	F/R1 	 F/R2 	 F/R3 	 F/R4
05	at 1st Step at 2nd Step at 3rd Step	F1 F1 F1	or R1 or R1 or R1	 F2 F2	 or R2 or R2	 F3	 or R3
06	at 1st Step at 2nd Step at 3rd Step	F1	or R1	 F2	 or R2	 F3	 or R3

LY → Left Joystick Y axis **LX** → Left Joystick X axis **RY** → Right Joystick Y axis **RX** → Right Joystick X axis
F → Forward **F1** → Forward 1st step **F2** → Forward 2nd step **F3** → Forward 3rd step **F4** → Forward 4th step
F5 → Forward 5th step **R** → Reverse **R1** → Reverse 1st step **R2** → Reverse 2nd step **R3** → Reverse 3rd step
R4 → Reverse 4th step **R5** → Reverse 5th step **F/R1** → Forward/Reverse shared 1st step
F/R2 → Forward/Reverse shared 2nd step **F/R3** → Forward/Reverse shared 3rd step
F/R4 → Forward/Reverse shared 4th step **F/R5** → Forward/Reverse shared 5th step

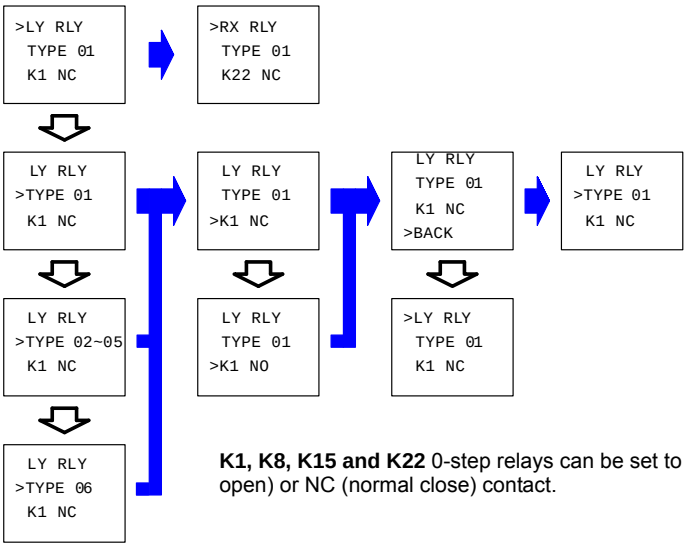
PS1 button is the "Enter" or "Change" command.
PS2 button is the "Next" command.

Left Joystick X Axis (LX)



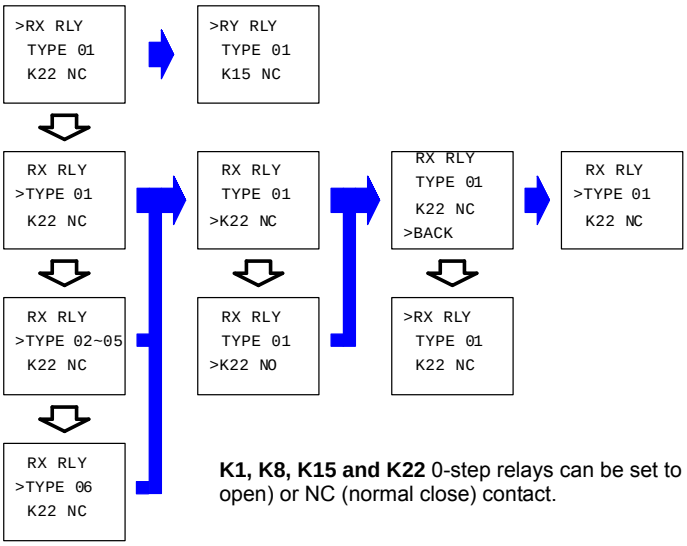
K1, K8, K15 and K22 0-step relays can be set to NO (normal open) or NC (normal close) contact.

Left Joystick Y Axis (LY)



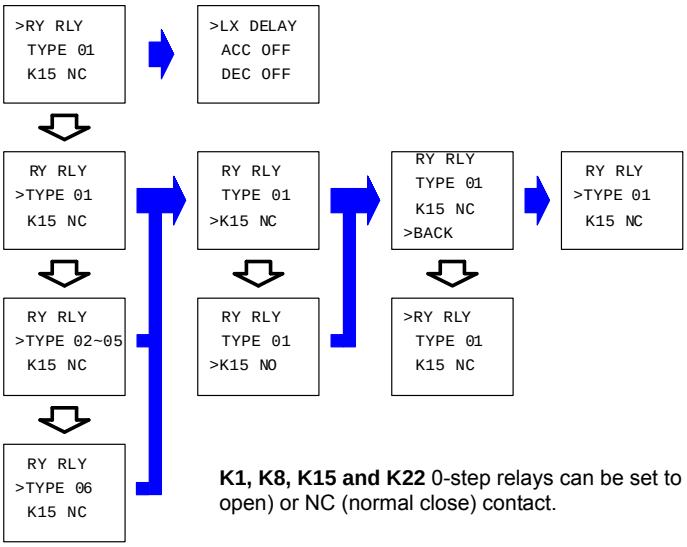
K1, K8, K15 and K22 0-step relays can be set to NO (normal open) or NC (normal close) contact.

Right Joystick X Axis (RX)



K1, K8, K15 and K22 0-step relays can be set to NO (normal open) or NC (normal close) contact.

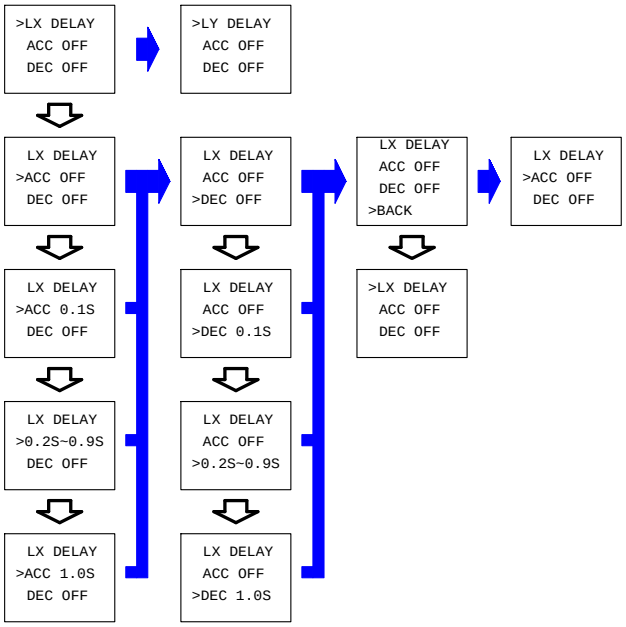
Right Joystick Y Axis (RY)



K1, K8, K15 and K22 0-step relays can be set to NO (normal open) or NC (normal close) contact.

4.2.10 Joystick LX Acceleration and Deceleration Delay

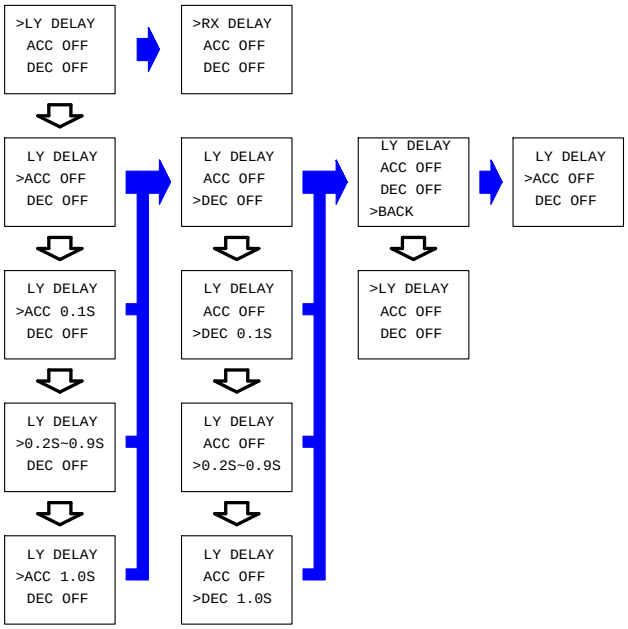
PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



Joystick LX is the left joystick X axis.

4.2.11 Joystick LY Acceleration and Deceleration Delay

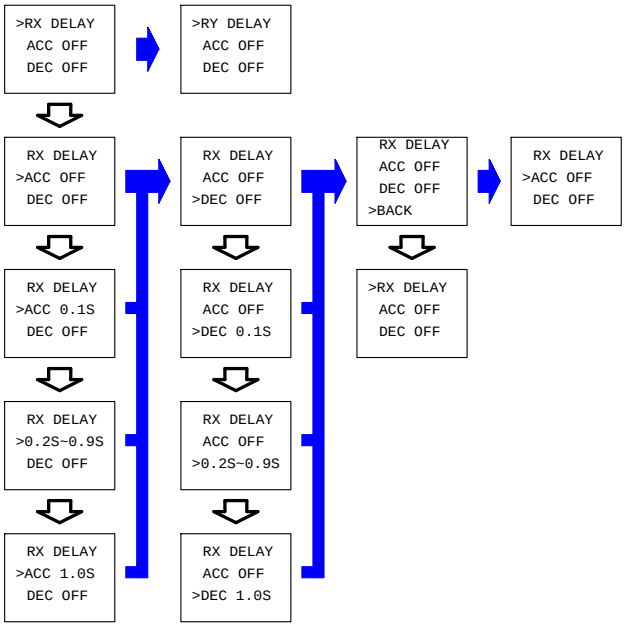
PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



Joystick LY is the left joystick Y axis.

4.2.12 Joystick RX Acceleration and Deceleration Delay

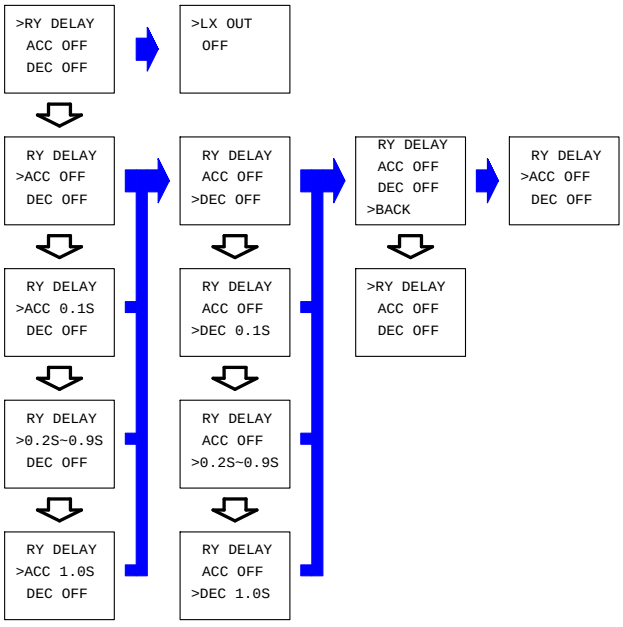
PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



Joystick RX is the right joystick X axis.

4.2.13 Joystick RY Acceleration and Deceleration Delay

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



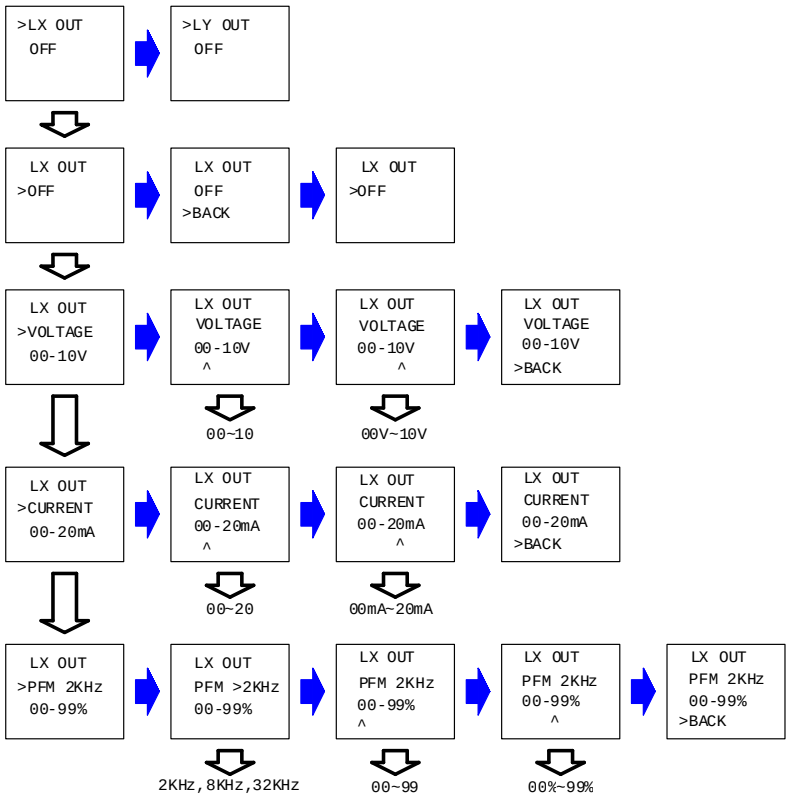
Joystick RY is the right joystick Y axis.

4.2.14 Analog Outputs (Voltage, Current and PFM)

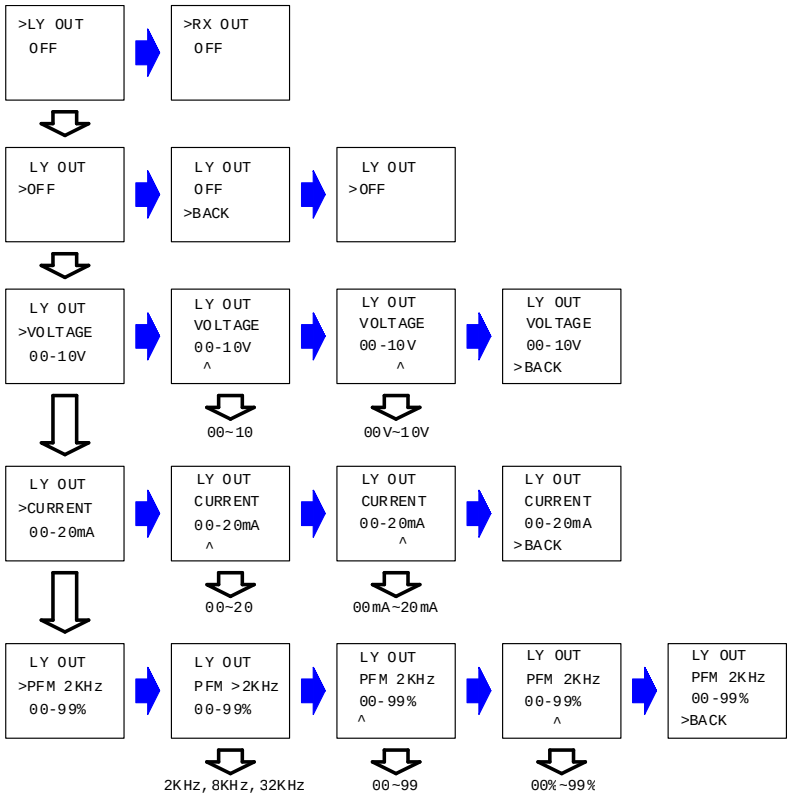
PS1 button is the “Enter” or “Change” command.

PS2 button is the “Next” command.

Left Joystick X Axis (LX)



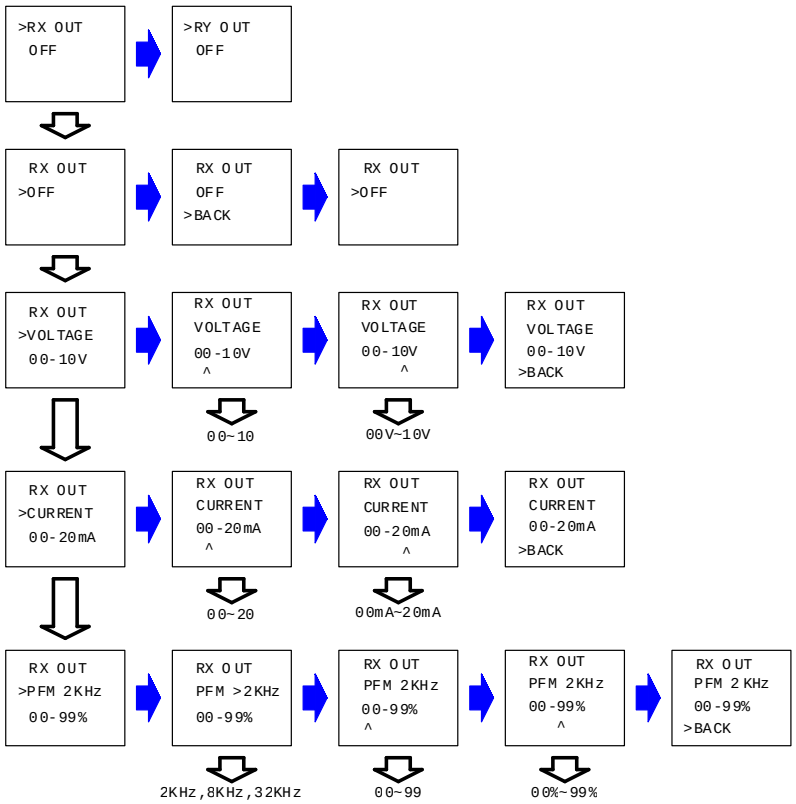
Left Joystick Y Axis (LY)



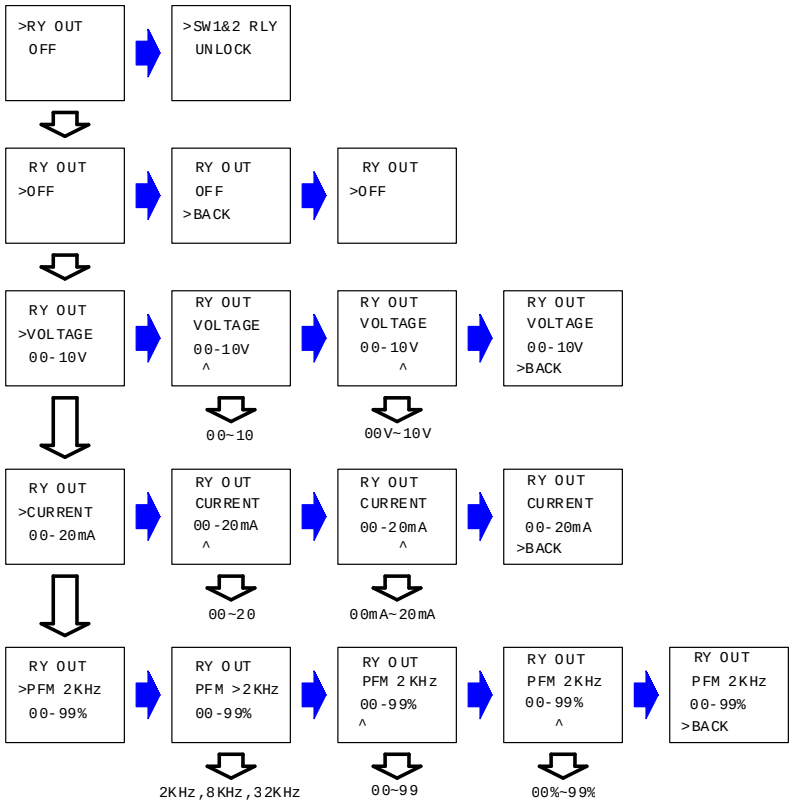
PS1 button is the “Enter” or “Change” command.

PS2 button is the “Next” command.

Right Joystick X Axis (RX)



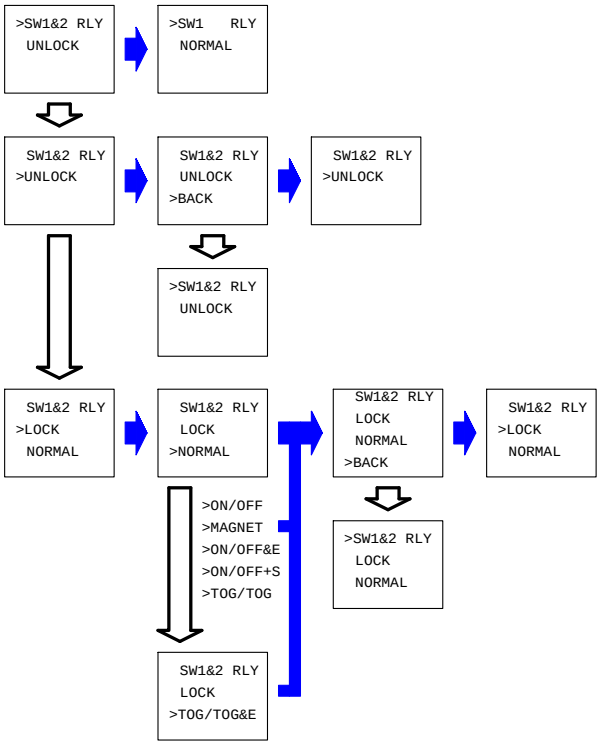
Right Joystick Y Axis (RY)



4.2.15 SW1+SW2 Output Relays Function

PS1 button is the “Enter” or “Change” command.

PS2 button is the “Next” command.



“UNLOCK” means both SW1 and SW2 output relays are not interlocked.

“LOCK” means both SW1 and SW2 output relays are interlocked.

When “UNLOCK” is selected proceed to SW1 and SW2 output relay function (see section 4.2.16 and 4.2.17)

When “LOCK” is selected proceed to the selections listed below and disregard section 4.2.16 and 4.2.17)

Select “NORMAL” both output relays become interlocking momentary contacts.

Select receiver “TOG/TOG” both output relays become interlocking toggled contacts.

Select receiver “TOG/TOG&E” both output relays become interlocking toggled contacts affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “ON/OFF” both output relays become interlocking On and Off contacts.

Select “ON/OFF+S” both output relays become interlocking On and Off contacts. Must press the green START button along with the On or Off button to work.

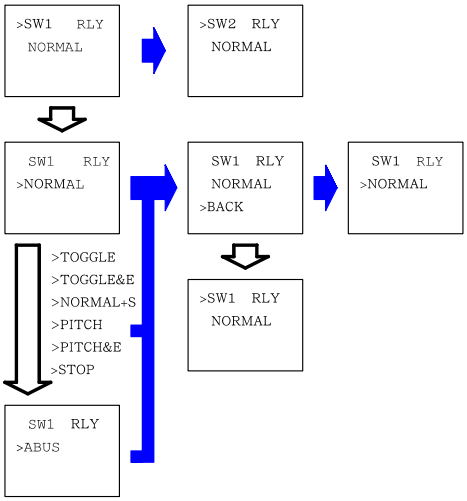
Select “ON/OFF&E” both output relays become interlocking On and Off contacts affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “MAGNET” the two output relays become interlocking Magnet ON and OFF contacts.

Important note: When one of the above is selected make sure the same SW1 and SW2 button function on transmitter are both set to “NORMAL” (see section 4.1.11 and 4.1.12).

4.2.16 SW1 Output Relay Function

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



Select “NORMAL” the output relay becomes momentary contact.

Select “NORMAL+S” the output relay becomes momentary contact. Must press the green START button together to work.

Select receiver “TOGGLE” the output relay becomes toggled contact.

Select receiver “TOGGLE&E” the output relay becomes toggled contact affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “PITCH” SW1 button becomes the “Pitch” function in Pitch & Catch Operation.

Select “PITCH&E” SW1 button becomes the “Pitch” function in Pitch & Catch Operation. When Pitch command is initiated the receiver mains are disconnected.

Select “STOP” SW1 button becomes an auxiliary e-stop function. Press to disconnect the receiver mains and press START button to reconnect the receiver mains.

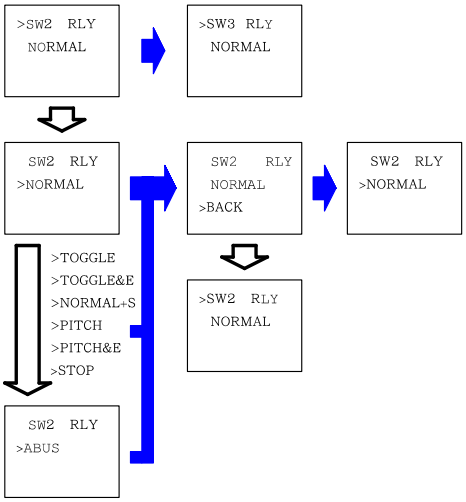
Select ABUS (reversed logic A/B switching) all contacts are reversed when all pushbuttons, rocker switches and rotary switches are set to A/A+B/B function (see section 4.1.11).

Important note 1: When one of the above is selected make sure the same SW1 button function on transmitter is set to “NORMAL” (see section 4.1.11).

Important note 2: When select Pitch & Catch function make sure you set the spare transmitter to the next channel up and the receiver channel scanning to “02” (see section 4.2.4).

4.2.17 SW2 Output Relay Function

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



Select “NORMAL” the output relay becomes momentary contact.

Select “NORMAL+S” the output relay becomes momentary contact. Must press the green START button together to work.

Select receiver “TOGGLE” the output relay becomes toggled contact.

Select receiver “TOGGLE&E” the output relay becomes toggled contact affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “PITCH” SW2 button becomes the “Pitch” function in Pitch & Catch Operation.

Select “PITCH&E” SW2 button becomes the “Pitch” function in Pitch & Catch Operation. When Pitch command is initiated the receiver mains are disconnected.

Select “STOP” SW2 button becomes an auxiliary e-stop function. Press to disconnect the receiver mains and press START button to reconnect the receiver mains.

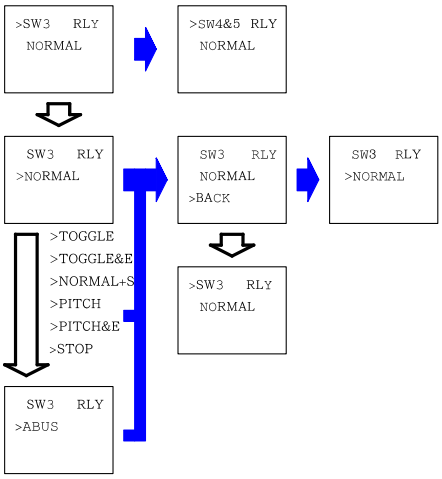
Select ABUS (reversed logic A/B switching) all contacts are reversed when all pushbuttons, rocker switches and rotary switches are set to A/A+B/B function (see section 4.1.12).

Important note 1: When one of the above is selected make sure the same SW2 button function on transmitter is set to “NORMAL” (see section 4.1.12).

Important note 2: When select Pitch & Catch function make sure you set the spare transmitter to the next channel up and the receiver channel scanning to “02” (see section 4.2.4).

4.2.18 SW3 Output Relay Function

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



Select “NORMAL” the output relay becomes momentary contact.

Select “NORMAL+S” the output relay becomes momentary contact. Must press the green START button together to work.

Select receiver “TOGGLE” the output relay becomes toggled contact.

Select receiver “TOGGLE&E” the output relay becomes toggled contact affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “PITCH” SW3 button becomes the “Pitch” function in Pitch & Catch Operation.

Select “PITCH&E” SW3 button becomes the “Pitch” function in Pitch & Catch Operation. When Pitch command is initiated the receiver mains are disconnected.

Select “STOP” SW3 button becomes an auxiliary e-stop function. Press to disconnect the receiver mains and press START button to reconnect the receiver mains.

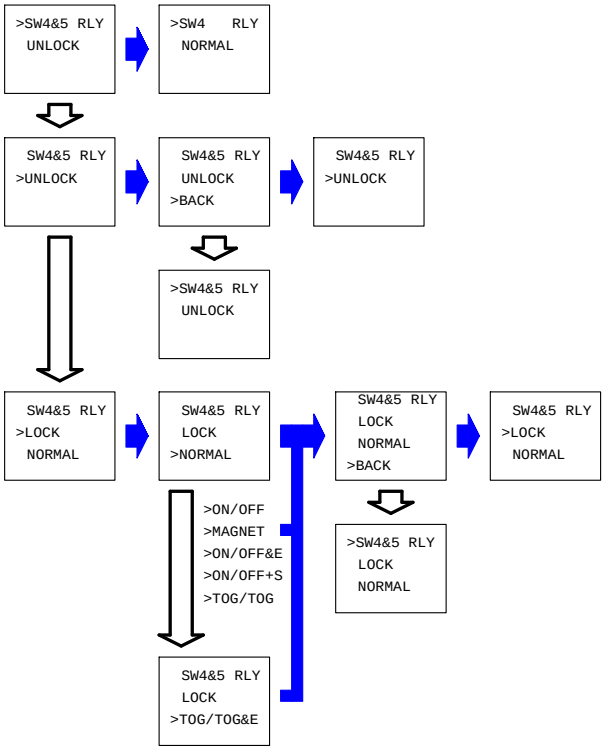
Select ABUS (reversed logic A/B switching) all contacts are reversed when all pushbuttons, rocker switches and rotary switches are set to A/A+B/B function (see section 4.1.13).

Important note 1: When one of the above is selected make sure the same SW3 button function on transmitter is set to “NORMAL” (see section 4.1.13).

Important note 2: When select Pitch & Catch function make sure you set the spare transmitter to the next channel up and the receiver channel scanning to “02” (see section 4.2.4).

4.2.19 SW4+SW5 Output Relays Function

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



“UNLOCK” means both SW4 and SW5 output relays are not interlocked.

“LOCK” means both SW4 and SW5 output relays are interlocked.

When “UNLOCK” is selected proceed to SW4 and SW5 output relay function (see section 4.2.20 and 4.2.21)

When “LOCK” is selected proceed to the selections listed below and disregard section 4.2.20 and 4.2.21)

Select “NORMAL” both output relays become interlocking momentary contacts.

Select receiver “TOG/TOG” both output relays become interlocking toggled contacts.

Select receiver “TOG/TOG&E” both output relays become interlocking toggled contacts affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “ON/OFF” both output relays become interlocking On and Off contacts.

Select “ON/OFF+S” both output relays become interlocking On and Off contacts. Must press the green START button along with the On or Off button to work.

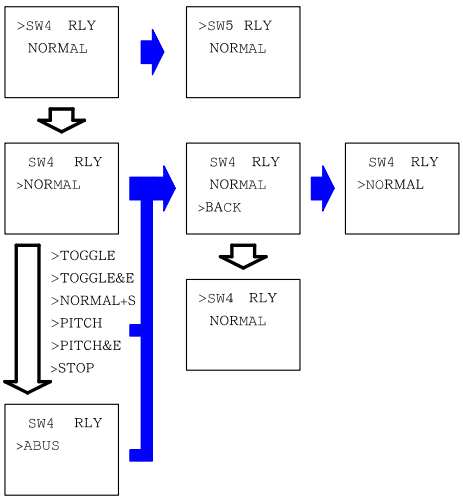
Select “ON/OFF&E” both output relays become interlocking On and Off contacts affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “MAGNET” the two output relays become interlocking Magnet ON and OFF contacts.

Important note: When one of the above is selected make sure the same SW4 and SW5 button function on transmitter are both set to “NORMAL” (see section 4.1.14 and 4.1.15).

4.2.20 SW4 Output Relay Function

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



Select “NORMAL” the output relay becomes momentary contact.

Select “NORMAL+S” the output relay becomes momentary contact. Must press the green START button together to work.

Select receiver “TOGGLE” the output relay becomes toggled contact.

Select receiver “TOGGLE&E” the output relay becomes toggled contact affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “PITCH” SW4 button becomes the “Pitch” function in Pitch & Catch Operation.

Select “PITCH&E” SW4 button becomes the “Pitch” function in Pitch & Catch Operation. When Pitch command is initiated the receiver mains are disconnected.

Select “STOP” SW4 button becomes an auxiliary e-stop function. Press to disconnect the receiver mains and press START button to reconnect the receiver mains.

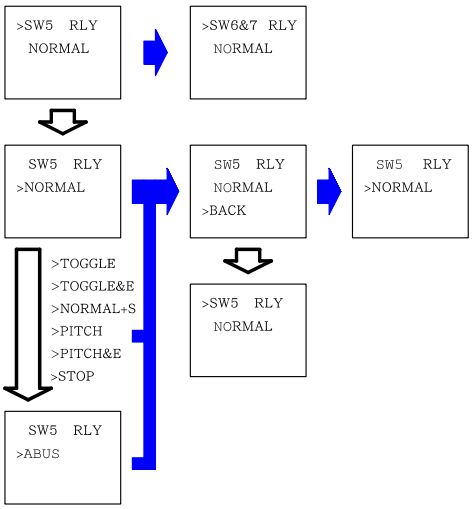
Select ABUS (reversed logic A/B switching) all contacts are reversed when all pushbuttons, rocker switches and rotary switches are set to A/A+B/B function (see section 4.1.14).

Important note 1: When one of the above is selected make sure the same SW4 button function on transmitter is set to “NORMAL” (see section 4.1.14).

Important note 2: When select Pitch & Catch function make sure you set the spare transmitter to the next channel up and the receiver channel scanning to “02” (see section 4.2.4).

4.2.21 SW5 Output Relay Function

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



Select “NORMAL” the output relay becomes momentary contact.

Select “NORMAL+S” the output relay becomes momentary contact. Must press the green START button together to work.

Select receiver “TOGGLE” the output relay becomes toggled contact.

Select receiver “TOGGLE&E” the output relay becomes toggled contact affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “PITCH” SW5 button becomes the “Pitch” function in Pitch & Catch Operation.

Select “PITCH&E” SW5 button becomes the “Pitch” function in Pitch & Catch Operation. When Pitch command is initiated the receiver mains are disconnected.

Select “STOP” SW5 button becomes an auxiliary e-stop function. Press to disconnect the receiver mains and press START button to reconnect the receiver mains.

Select ABUS (reversed logic A/B switching) all contacts are reversed when all pushbuttons, rocker switches and rotary switches are set to A/A+B/B function (see section 4.1.15).

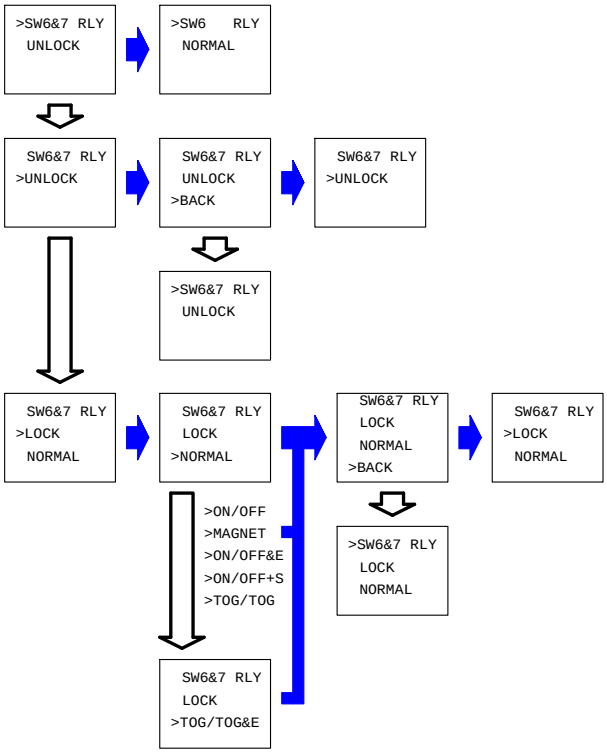
Important note 1: When one of the above is selected make sure the same SW5 button function on transmitter is set to “NORMAL” (see section 4.1.15).

Important note 2: When select Pitch & Catch function make sure you set the spare transmitter to the next channel up and the receiver channel scanning to “02” (see section 4.2.4).

4.2.22 SW6+SW7 Output Relays Function

PS1 button is the “Enter” or “Change” command.

PS2 button is the “Next” command.



“UNLOCK” means both SW6 and SW7 output relays are not interlocked.

“LOCK” means both SW6 and SW7 output relays are interlocked.

When “UNLOCK” is selected proceed to SW6 and SW7 output relay function (see section 4.2.23 and 4.2.24)

When “LOCK” is selected proceed to the selections listed below and disregard section 4.2.23 and 4.2.24)

Select “NORMAL” both output relays become interlocking momentary contacts.

Select receiver “TOG/TOG” both output relays become interlocking toggled contacts.

Select receiver “TOG/TOG&E” both output relays become interlocking toggled contacts affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “ON/OFF” both output relays become interlocking On and Off contacts.

Select “ON/OFF+S” both output relays become interlocking On and Off contacts. Must press the green START button along with the On or Off button to work.

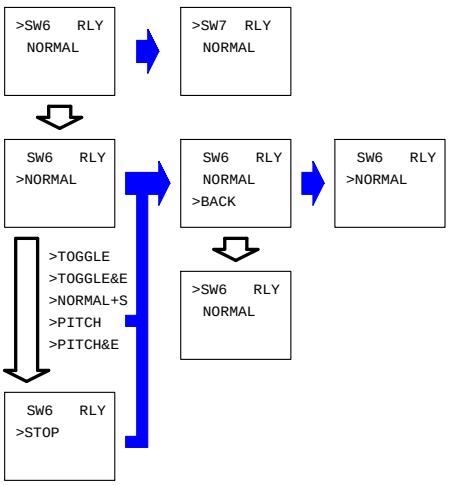
Select “ON/OFF&E” both output relays become interlocking On and Off contacts affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “MAGNET” the two output relays become interlocking Magnet ON and OFF contacts.

Important note: When one of the above is selected make sure the same SW6 and SW7 button function on transmitter are both set to “NORMAL” (see section 4.1.16 and 4.1.17).

4.2.23 SW6 Output Relay Function

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



Select “NORMAL” the output relay becomes momentary contact.

Select “NORMAL+S” the output relay becomes momentary contact. Must press the green START button together to work.

Select receiver “TOGGLE” the output relay becomes toggled contact.

Select receiver “TOGGLE&E” the output relay becomes toggled contact affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “PITCH” SW6 button becomes the “Pitch” function in Pitch & Catch Operation.

Select “PITCH&E” SW6 button becomes the “Pitch” function in Pitch & Catch Operation. When Pitch command is initiated the receiver mains are disconnected.

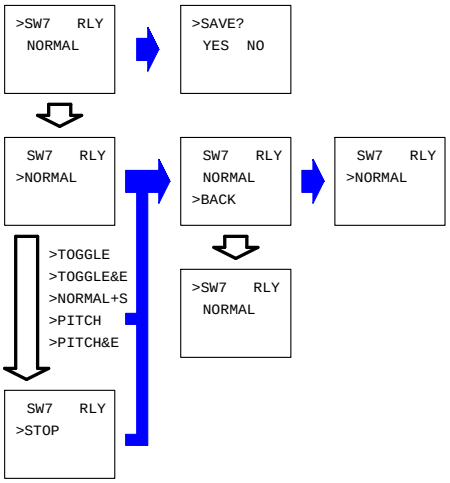
Select “STOP” SW6 button becomes an auxiliary e-stop function. Press to disconnect the receiver mains and press START button to reconnect the receiver mains.

When select Pitch & Catch function make sure you set the spare transmitter to the next channel up and the receiver channel scanning to “02” (see section 4.2.4).

Important note: When one of the above is selected make sure the same SW6 button function on transmitter is set to “NORMAL” (see section 4.1.16).

4.2.24 SW7 Output Relay Function

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



Select “NORMAL” the output relay becomes momentary contact.

Select “NORMAL+S” the output relay becomes momentary contact. Must press the green START button together to work.

Select receiver “TOGGLE” the output relay becomes toggled contact.

Select receiver “TOGGLE&E” the output relay becomes toggled contact affected by the e-stop command (output relay opens when e-stop button is pressed).

Select “PITCH” SW7 button becomes the “Pitch” function in Pitch & Catch Operation.

Select “PITCH&E” SW7 button becomes the “Pitch” function in Pitch & Catch Operation. When Pitch command is initiated the receiver mains are disconnected.

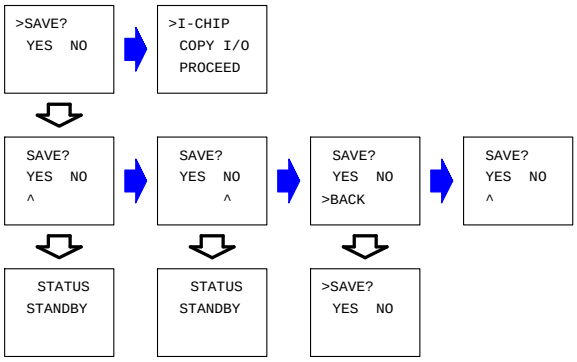
Select “STOP” SW7 button becomes an auxiliary e-stop function. Press to disconnect the receiver mains and press START button to reconnect the receiver mains.

When select Pitch & Catch function make sure you set the spare transmitter to the next channel up and the receiver channel scanning to “02” (see section 4.2.4).

Important note: When one of the above is selected make sure the same SW7 button function on transmitter is set to “NORMAL” (see section 4.1.17).

4.2.25 Save Function

PS1 button is the “Enter” or “Change” command.
PS2 button is the “Next” command.



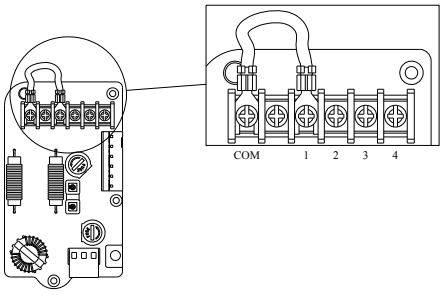
When you see the “STATUS STANDBY” screen it means the information is saved or not saved.

The system will exit the programming mode after 5 minutes of inactivity (info not saved).

4.2.26 Voltage Settings

Always check the voltage setting is correct for your application prior to installation.

Position 1 → 110~120VAC
Position 2 → 220~240VAC or 24VAC*
Position 3 → 380~400VAC or 42VAC*
Position 4 → 410~460VAC or 48VAC* or 9~36VDC**



* *For system equipped with 24/42/48VAC power supply.*
** *For system equipped with 9~36VDC power supply.*

F9 and F10 power fuse ratings:

FUSE #	110~120VAC	220~240VAC	380~400VAC	410~460VAC	24VAC	42 & 48VAC	9~36VDC
F9	1.0A (red)	1.0A (red)	1.0A (red)	0.5A (blue)	3.0A (yellow)	2.0A (purple)	3.0A (yellow)
F10	1.0A (red)	1.0A (red)	1.0A (red)	0.5A (blue)	3.0A (yellow)	2.0A (purple)	3.0A (yellow)

* All output relay fuse → 5.0A (clear)

5. System Channels Table

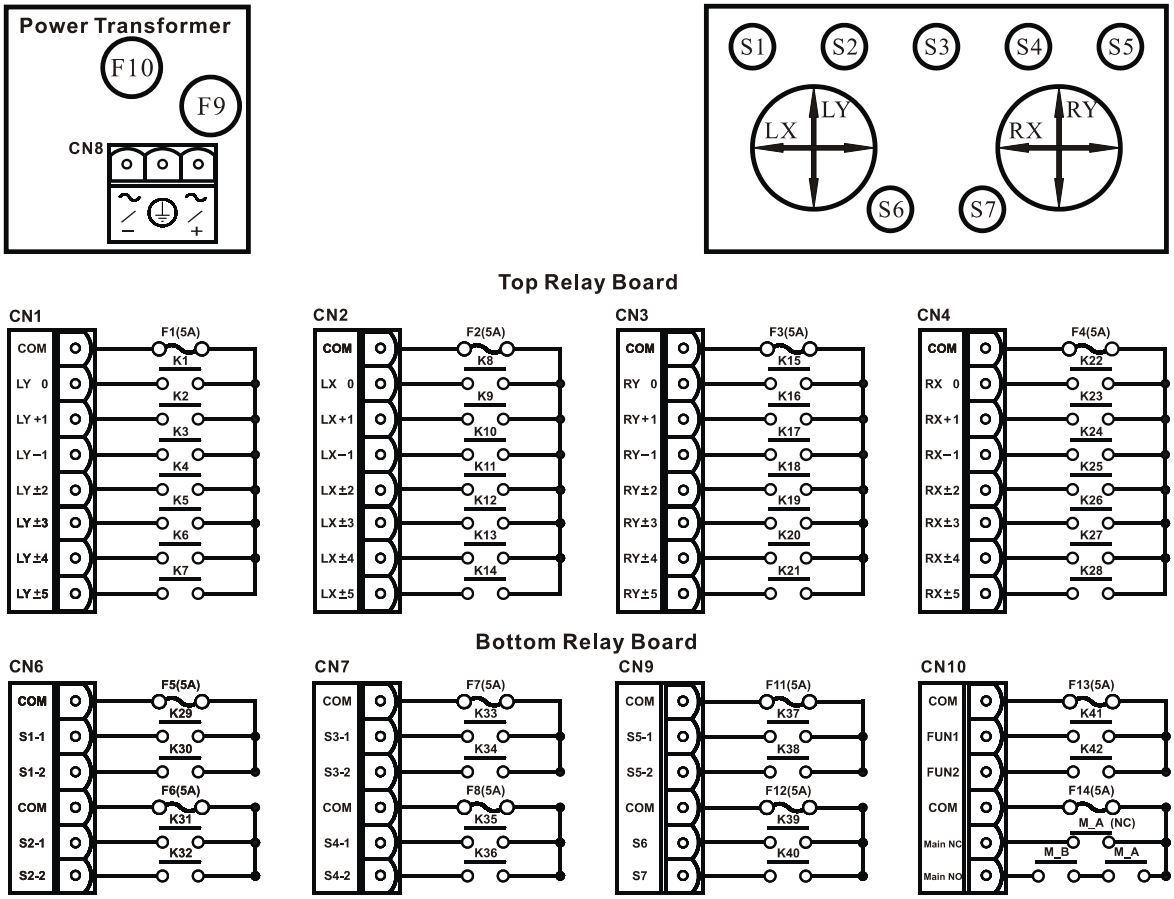
Channel	Frequency	Channel	Frequency
01	433.000MHZ	**32**	433.775MHZ
02	433.025MHZ	**33**	433.800MHZ
03	433.050MHZ	**34**	433.825MHZ
04	433.075MHZ	**35**	433.850MHZ
05	433.100MHZ	**36**	433.875MHZ
06	433.125MHZ	**37**	433.900MHZ
07	433.150MHZ	**38**	433.925MHZ
08	433.175MHZ	**39**	433.950MHZ
09	433.200MHZ	**40**	433.975MHZ
10	433.225MHZ	**41**	434.000MHZ
11	433.250MHZ	**42**	434.025MHZ
12	433.275MHZ	**43**	434.050MHZ
13	433.300MHZ	**44**	434.075MHZ
14	433.325MHZ	**45**	434.100MHZ
15	433.350MHZ	**46**	434.125MHZ
16	433.375MHZ	**47**	434.150MHZ
17	433.400MHZ	**48**	434.175MHZ
18	433.425MHZ	**49**	434.200MHZ
19	433.450MHZ	**50**	434.225MHZ
20	433.475MHZ	**51**	434.250MHZ
21	433.500MHZ	**52**	434.275MHZ
22	433.525MHZ	**53**	434.300MHZ
23	433.550MHZ	**54**	434.325MHZ
24	433.575MHZ	**55**	434.350MHZ
25	433.600MHZ	**56**	434.375MHZ
26	433.625MHZ	**57**	434.400MHZ
27	433.650MHZ	**58**	434.425MHZ
28	433.675MHZ	**59**	434.450MHZ
29	433.700MHZ	**60**	434.475MHZ
30	433.725MHZ	**61**	434.500MHZ
31	433.750MHZ	**62**	434.525MHZ

Note: for Tandem System Channels Table please refer to the Tandem manual.

6. Receiver Installation

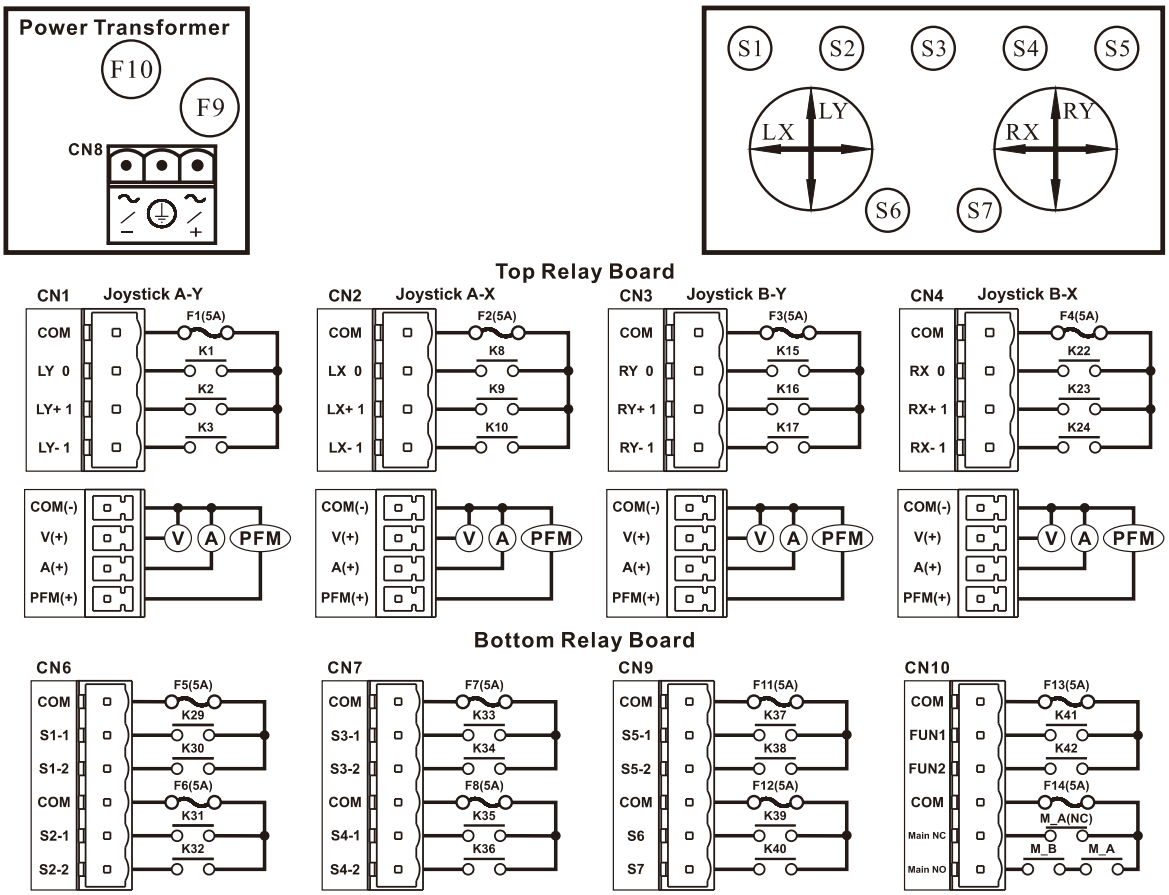
6.1 Output Relay Contact Diagram

6.1.1 Digital Outputs



Please refer to section 4.2.26 for various input voltage settings and power fuse ratings.

6.1.2 Analog Outputs

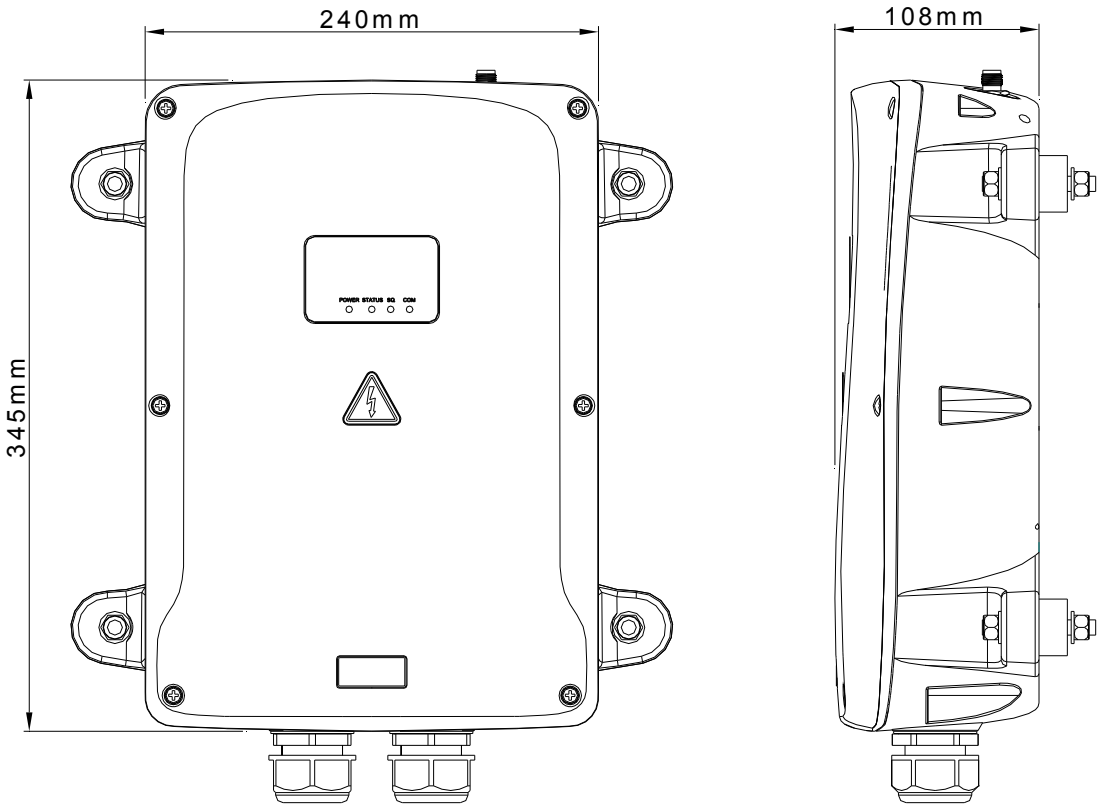


Please refer to section 4.2.26 for various input voltage settings and power fuse ratings.

6.2 Pre-Installation Precautions

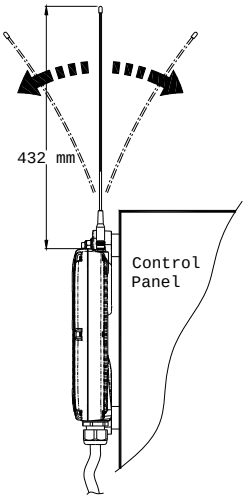
1. Make sure the transmitter and receiver have identical serial number/ID codes and channels.
2. Make sure the receiver is not set to the same channel as any other systems in use in the surrounding area.
3. Make sure that the crane or equipment is working properly prior to installation.
4. Make sure the power source to the receiver is set correctly.
5. Switch off the main power source to the crane or equipment prior to installation.

6.3 Step-By-Step Installation



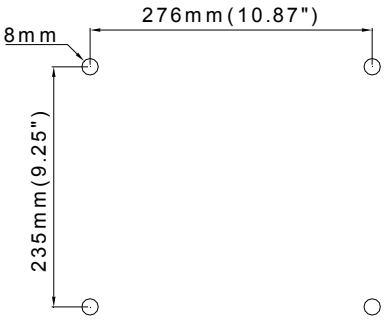
1. For best reception the location of the receiver should be visible to the operator at all times.
2. The location selected should not be exposed to high levels of electric noise. Mounting the receiver next to an unshielded variable frequency drive may cause minor interference. Always locate the receiver as far away from the variable frequency drive as possible.

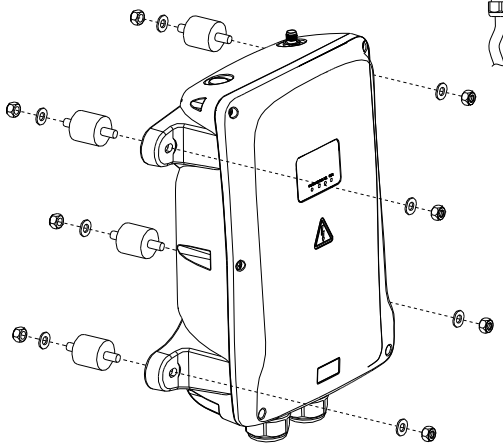
3. Ensure the selected location has adequate space to accommodate the receiver. If an external antenna is used, to avoid the possibility of antenna damage always locate the receiver where the antenna is free from any obstacles from all directions (refer to diagram at right).



4. For better reception, make sure the receiver is in an upright position.

5. Drill four holes (8mm in diameter) on the control panel or location where the receiver is to be installed.





6. Make sure the bolts are tightened after installation.

7. For system wiring please refer to section 6.1.

6.4 System Testing

1. Turn on the power source to the receiver and test the MAIN relay output by pressing the red emergency stop button and making sure that it properly opens and closes the mainline disconnect contactor.

2. Test the operation of each function to ensure it corresponds to the transmitter direction labels or the pendant it is replacing.

3. Test the limit switches (if any) to see if they are working properly.

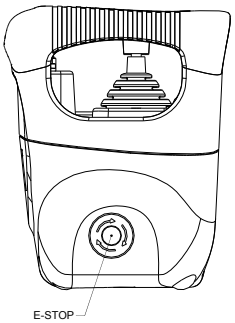
4. If your new remote control is replacing an existing pendant, make sure it is completely disconnected and placed in a safe location to prevent unwanted control commands.

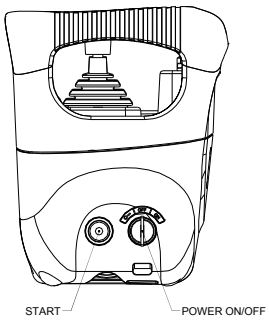
7. Operating Procedure

7.1 General Operating Procedure

a. Reset the red emergency stop button located on the left hand side of the transmitter by pulling it outward or rotating it clockwise.

b. Turn on the transmitter power by inserting the black-colored key into the keyswitch slot located on the right hand side of the transmitter and rotate it clockwise to “On” position.





c. After turning on the transmitter power the LCD screen will display “RX OK! PressSTART”. Press the green START button next to the power keyswitch for up to two (2) seconds to activate the receiver mains.

d. Available icons:

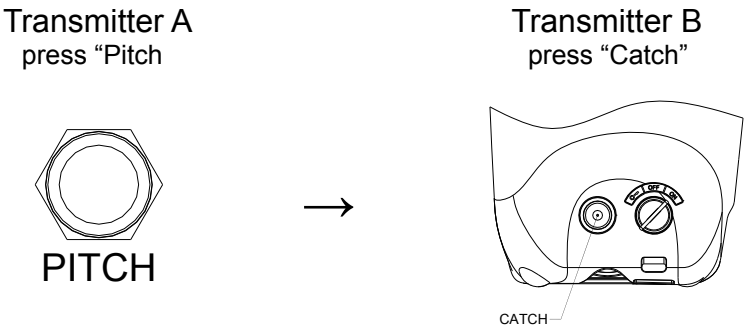
e. In case of an emergency, press the red e-stop button inward to deactivate the receiver mains within 500mS. “EMS!” is displayed on the LCD screen. Pull it outward or rotate the red button clockwise to reset the e-stop button. Then press the green START button for up to two (2) seconds to reactivate the receiver mains when “RX OK! PressSTART” reappears on the LCD screen.

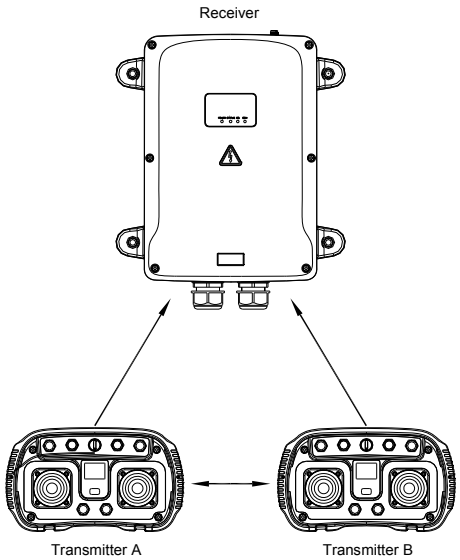
f. After 5 minutes of inactivity the receiver mains are deactivated temporarily (depends on transmitter inactivity timer set on section 4.1.4). Press the green START button for up to two (2) seconds to reactivate the receiver mains and continue operation.

g. Turn off the transmitter power by rotating the power key counter-clockwise to “Off” position; it will deactivate the transmitter power and the receiver mains altogether. Turn it further counter-clockwise to release the key.

7.2 Pitch & Catch Operating Procedure

In order for transmitter-B to take over the receiver, or vise versa, transmitter-A must press the “Pitch” button on the transmitter for up to two (2) seconds. This will release transmitter-A control of the receiver. Transmitter B then presses the green “Start/Catch” button for up to two (2) seconds to gain control of the same receiver.



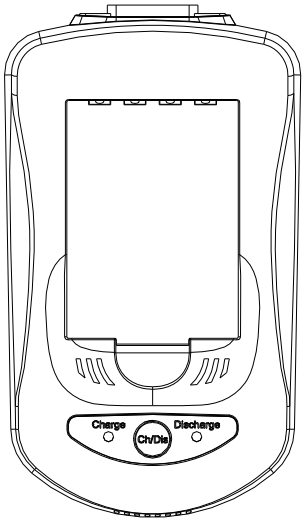


7.3 Automatic Channel Scanning Operating Procedure

When transmitter channel is changed (see section 4.1.2) press the green START button for up to sixty (60) seconds to reconnect with the receiver unit. Make sure the receiver unit is set to Scan “ALL” in the receiver channel scanning section 4.2.4.

7.4 Battery Charging Instruction

When battery pack is inserted it will automatically go into charging mode. Press the Charge/Discharge button to switch from charging to discharging, or vise versa. The total charging time is approximately 4 hours from fully discharged to fully charged.



Power On	→	Charge LED blinks green 3 times.
Charging	→	Charge LED blinks green constantly.
Discharging	→	Discharge LED blinks red constantly.
Fully charged	→	Charge LED constant green.

8. Status and Warnings

8.1 Transmitter

LOW BATTERY	Battery low power	xxxxxxxxxx LYX xx RYX JAMMED	Bad joystick internal contact or contacts detected
I-CHIP NOT MATCH	Incorrect I-Chip version	RF NOT CONNECT	Transmitting module not installed
I-CHIP NOT CONNECT	I-Chip not installed	TILTED! PressSTART	Transmitter not in upright position

RX OK! PressSTART	Or	RX OK! PressANY	Signal received from the receiver at system power on
  PressSTART	Or	 PressANY	No signal from the receiver at system power on
RX LOW VOLTAGE PressSTART	Or	RX LOW VOLTAGE PressANY	Receiver low input voltage
DECODER DEFECT PressSTART	Or	DECODER DEFECT PressANY	Decoder module in receiver defective
MAIN RLY DEFECT PressSTART	Or	MAIN RLY DEFECT PressANY	Main relay in receiver defective

* *PressSTART and PressANY → Please refer to section 4.1.4 transmitter inactivity timer setting*

8.2 Receiver

8.2.1 LED Status Indications

Type	Display Type	Indication
1	Fast green blinks	Decoding in progress
2	Slow green blinks	Decoding on standby
3	Fast red blinks	Incorrect transmitter serial number and type
4	Two red blinks	Receiver MAIN jammed or defective
5	Three red blinks	Decoder module defective
6	Four red blinks + one green blink	Receiving module defective
7	Slow red blinks	E-stop command initiated
8	Constant red	Receiver under-voltage, LV output relay activated

8.2.2 LED SQ Indications

Type	Display Type (Red)	Indication
1	On	Transmission received
2	Off	No transmission
3	Blinks intermittently	Other radio interference

8.2.3 LED POWER Indications

Type	Display Type (Red)	Indication
1	On	Power to receiver
2	Off	No power to receiver

8.2.4 LED COM Indications

Type	Display Type (Red)	Indication
1	On	Power to relay Board
2	Off	No power to relay board

8.2.5 LCD Indications

STATUS DECODING	Decoding in progress
STATUS STANDBY	Decoder on standby
STATUS POS INITIATED	Transmitter power off
STATUS EMS INITIATED	Transmitter e-stop command initiated
STATUS LOW VOLTAGE	Receiver low input voltage
STATUS INCORRECT S/N	Incorrect serial number and type on transmitter
STATUS DECODER DEFECTIVE	Decoder module defective
STATUS MAIN DEFECTIVE	Main relay defective
STATUS RF1 DEFECTIVE	Receiving module defective

9. Trouble Shooting Tips

Problems	Possible Reasons	Suggestions
No response when transmitter is in operation **(Improper startup & settings)**	Transmitter low battery	Check the transmitter battery level.
	Emergency stop button activated prior to startup	Prior to turning on the transmitter power make sure that the red emergency stop button is elevated.
	Improper startup procedure	Redo the startup procedure.
	Incorrect system channel	Check and make sure the transmitter and receiver are with same channel.
	Incorrect system serial number	Check and make sure the transmitter and receiver are with same serial number.
	System out of range	Make sure the startup procedure is initiated within 100 meters from the receiver location.
No response when transmitter is in operation **(Damaged hardware)**	Defective transmitting and receiving module	Check the SQ display on the face of the receiver unit. If it does not light up when operating the transmitter then either the transmitting or receiving module is defective. Replace the transmitting module first then the receiving module.
	Defective encoder board or decoder module	If still no response after replacing the, transmitting and receiving modules then replace the transmitter encoder board. If still doesn't work then the decoder module is defective.
No AC power to the receiver	Incorrect input voltage	Make sure the source voltage is set correctly.
	Blown fuse	Check for any blown fuse.
	Incorrect wiring	Check input voltage connection.
Outputs do not correspond to transmitter	Incorrect output connection	Check the system wiring again.

10. System Specifications

Frequency Range	:	433~434MHz
Channel Spacing	:	25kHz (Standard) / 50kHz (Tandem)
Number of Channels	:	62 channels
Modulation	:	Digital Frequency Modulation, 20bit address, 32bit CRC Parity Check and Hamming Code.
Encoder & Decoder	:	Microprocessor-controlled
Transmitting Range	:	>100 Meters / 300 Feet
Frequency Control	:	Synthesized PLL
Receiver Type	:	Frequency Auto Scanning
Receiver Sensitivity	:	-116dBm
Antenna Impedance	:	50 ohms
Responding Time	:	50 Milliseconds (average)
Transmitting Power	:	2.0mW
Enclosure Type	:	NEMA 4
Enclosure Rating	:	IP66
Output Contact Rating	:	250V @ 8 Amps
Transmitter Operating Voltage	:	DC 6.0V
Receiver Power Consumption	:	30VA (max)
Receiver Supplied Voltage	:	110~240VAC @ 50/60Hz
Charger Unit Power Consumption	:	5.0 VA (max)
Charger Unit Supplied Voltage	:	110~240VAC @ 50/60Hz
Operating Temperature	:	-25°C -- 75°C / -13°F -- 167°F
Transmitter Dimension	:	247mm (L) x 145mm (W) x 180mm (H)
Receiver Dimension	:	345mm (L) x 240mm (W) x 108mm (H)
Transmitter Weight	:	1.50kg (include battery pack)
Receiver Weight	:	3.6kg

CE EU Declaration of Conformity CE

(EMC, R&TTE, SAFETY & MACHINERY)

For the following equipment:

Product	:	Flex Series Radio Remote Control System
Multiple Listee Model No.	:	Flex 2JX
Manufacturer's Name	:	Advanced Radiotech Corporation
Manufacturer's Address	:	1F, 288-1, Hsin Ya Road, Chien Chen District
		Kaohsiung City, Taiwan

We herby declare, that all major safety requirements, concerning the CE Mark Directive 2006/42/EC and Low Voltage Directive 2006/95/EC**,** Electromagnetic Compatibility Directives 2004/108/EC**,** R&TTE Directive 1999/5/EC are fulfilled, as laid out in the guideline set down by the member states of the EEC Commission.

The standards relevant for the evaluation of the electrical safety requirements are as follow:

EMC	:	EN 301 489-1 + EN 301 489-3
R&TTE	:	EN 300 220-2 V2.1.1
SAFETY	:	EN 60950:2006+A1+A11+A12
MACHINERY	:	EN 60204-32:2008, EN 13557:2003+A1:2008
		EN ISO 13849-1:2008 (PL=d), EN 60529 (IP66)

Test reports issued by:

EMC	:	SGS
R&TTE	:	SGS
SAFETY	:	SGS
MACHINERY	:	SGS

Person responsible for marking this declaration:

Tom Jou / President

Name and signature of authorized person